



Waterford Institute *of* Technology

INSTITIÚID TEICNEOLAÍOCHTA PHORT LÁIRGE

Projects & Dissertations in Computing

Department of Computing, Mathematics and Physics

CLASS OF
2011



Waterford Institute of Technology



Department of Computing, Mathematics & Physics Eugene Lawler Graduate School of Computing

Presentation of Final Year Projects Presentation of Dissertation Posters by M.Sc. Students

We would like to welcome the students, their parents and friends as well as our guests from industry to the presentation of Final Year Projects by students on the

B.Sc. (Honours) in Applied Computing
B.Sc. (Honours) in Computing and Forensics
B.Sc. (Honours) in Information Technology
B.Sc. (Honours) in Multimedia Applications Development
B.Sc. (Honours) in Physics with Computing
B.Sc. (Honours) in Software Systems Development

The posters reflect ongoing research on the dissertations by postgraduate students on

M.Sc. in Computing (Communications Software),
M.Sc. in Computing (Information Systems Processes)
M.Sc. in Computing (Multimedia and ELearning)

The faculty of the department are proud of the level of innovation and creativity achieved by the students. The quality of the presentations is a testament to the hard work of the students. Many of them have surmounted technical challenges and developed advanced applications that have research potential or are capable of commercial exploitation.

A special word of thanks is also due to staff in the department, for their expertise in devising academic programmes that are stimulating for students and that are also highly relevant to the development needs of the South East Region. The supervisors and coordination team played a very important role in directing the effort of the students and assuring the successful completion of the projects.

I would like to invite you to visit our computer laboratories and to discuss the projects and poster demonstrations with the students. The catalogue of undergraduate projects and postgraduate dissertation topics cover a vast spectrum of applications; potential employers are invited to contact the students using the associated email addresses.

Le gach dea-ghuí,
Dr. Mícheál Ó hÉigeartaigh (moheigeartaigh@wit.ie)

Table of contents for the remainder of the book:

Section	Pages
1. Introductory material:	3-10
Flexible Apprenticeship	3
Hiring Graduates	4
Collaboration on Undergraduate Projects	4
Feedback from Employers	4
Information for Prospective Undergraduate Students	5
Information for Prospective Postgraduate Students	6
Table of BSc projects in order of appearance	7
Table of BSc projects in order of surname	8
Table of BSc projects within programme	9
Sample Disciplines in the BSc projects	10
Sample Technologies in the BSc projects	10
2. BSc Projects	11-26
3. MSc Dissertations in Communications Software	27-29
Introduction	27
Tables of the dissertations in order of appearance and order of surname	28
The Dissertations	29
4. MSc Dissertations in Information Systems Processes	30-36
Introduction	30
Tables of the dissertations in order of appearance and order of surname	31
The Dissertations	32-36
5. MSc Dissertations in Multimedia and e-Learning	37-43
Introduction	37
Tables of the dissertations in order of appearance and order of surname	38
The Dissertations	39-42

Flexible Apprenticeship

All our undergraduate programmes incorporate a flexible apprenticeship (semester or year). This is designed to prepare students for their subsequent professional careers by offering them the opportunity to acquire transferable skills and marry theoretical knowledge with practical applications.

Apprenticeships take the form of

- Industrial Placement
- Active Service Learning - Supervised Placement in a Voluntary Organisation
- Erasmus Placement in a Non-English Speaking Environment
- Placement in a Designated Research Laboratory
- Collaborative Project on Commercialisation/ Industry Start Up

The apprenticeship process has matured over many years and the department has successfully placed a large number of students in industries ranging from multinational companies to SMEs. The process has a detailed management structure, incorporating visits from WIT faculty, supervision by professional staff and the requirement that students document their learning experiences within a structured reporting system.

Advantages for Employers

Employers get the opportunity, inter alia, to

- Access a supply of highly motivated young people with high technology skills
- Hire temporary staff who possess a refreshing mix of energy and innovation
- Buy in expertise in emerging areas of technology
- Evaluate and build relationships with future employees
- Cover holiday and short term leave for existing employees
- Implement finite projects that would otherwise be deferred

Student Preparation for the Apprenticeship

Prior to applying for the apprenticeship process, students are required to create a formal CV and to undertake training in interview techniques. Subsequently, they normally undergo a formal and competitive selection process, mandated externally.

Their attributes include

- Good theoretical and practical skills in their domain of study
- Flexibility to learn new procedures and technologies
- Team and interpersonal communication skills
- Documentation and version control skills
- A willingness to innovate and take on technical challenges

For further details, please contact the departmental administrator: mryan@wit.ie

Hiring Graduates

We are always happy to pass on requests from potential employers to students. The Graduate Placement Office offers a comprehensive service to employers. We have fixed the final year timetables, to facilitate students who wish to take up employment at the end of their flexible apprenticeship; they can then complete their final year over two years in block release mode.

Contact Details: Ms. Angela Collins

Email: acollins@wit.ie

Collaboration on Undergraduate Projects

We welcome the involvement of companies in undergraduate projects. We are particularly interested in encouraging students and companies to cooperate in projects with a commercialisation and applied research focus under the Enterprise Ireland sponsored Innovation Voucher Scheme. However, employers should note that the project life cycle is complex and typically spans a twelve month period, so please contact project coordinator, Mr. Ian Downey, at the earliest opportunity.

Contact details: Mr. Ian Downey

Email: idowney@wit.ie

Feedback from Employers

The current members of the Industry Advisory Council to the department are:

Mr. Pat Power (Glanbia), Dr. Hakeem Hammad (Boston Scientific),
Mr. Patrick Bruen (Sun Life Financial), Dr. Kevin Brady (Genzyme),
Mr. David Culliton (Kilkenny Chamber), Mr. Bill Kearney (IBM),
Mr. David O'Sullivan (Waterford Crystal), Mr. Liam Cronin (Microsoft)

We are greatly indebted to the members of the council for ongoing advice on all aspects of the department and the graduate school.

Our role is that of service to the South East Region and we greatly welcome advice and input from members of the community.

Contact details: Dr. Micheál Ó hÉigartaigh

Email: moheigartaigh@wit.ie

Information for Prospective Undergraduate Students

Department of Computing, Mathematics & Physics

At WIT, we take the view that students have unlimited ability and if they engage openly with faculty in their education, their brief stay with us will be marked with a sense of enjoyment, innovation and exhilaration.

The first year contains a sequence of interlinked modules on communication, critical thinking and learning skills. The importance of team work permeates all our academic programmes. Extensive use is made of our ELearning platform MOODLE in line with our philosophy of independent learning and self-directed study.

Practical assignments are blended with theoretical development on all modules. A strong emphasis is placed on industry relevant assignments. Great care is taken to give students industry-related transferable skills. Evaluation is typically a mixture of continuous assessment and formal examinations.

BSc (Honours) in Applied Computing – WD028

Chairperson: Ms. Mairead Meagher

Email: mmeagher@wit.ie

BSc (Honours) in Physics for Modern Technology

(This programme is to be confirmed.)

Chairperson: Dr. Eamon Molloy

Email: emolloy@wit.ie

BSc (Honours) in Computer Forensics – WD161

Chairperson: Mr. John Sheppard

Email: jsheppard@wit.ie

BSc (Honours) in Entertainment Systems – WD168

Chairperson: Mr. Karl Sandison , Mr. Robert O'Connor

Email: ksandison@wit.ie

BSc in Information Technology – WD 155

Chairpersons: Ms. Sinead O'Leary, Ms. Anne Verecker,
Mr. T.J.McDonald.

Email: soleary@wit.ie

BSc in Multimedia Applications Development – WD153

Chairpersons: Ms. Caroline Cahill.

Email: ccahill@wit.ie

BSc in Software Systems Development – WD151

Chairpersons: Ms. Mary Lyng, Ms. Clodagh Power,
Dr. Brenda Mullally.

Email: bmullally@wit.ie

Higher Diploma in Computing (Business Systems Analysis)

Chairperson: Mr Joe Daly

Email: jdaly@wit.ie

Higher Diploma in Computing (Applied Computing)

Chairperson: Ms. Ciara Cawley

Email: cmcawley@wit.ie

Higher Certificate in Information Technology Support

Chairperson: Ms. Anne Dunphy

Email: adunphy@wit.ie

Eugene Lawler Graduate School of Computing

Students wishing to pursue an MSc by Research or a PhD by Research should contact the chairperson of the Postgraduate Students Programme Board.

Contact: Dr. Noreen Quinn

Email: nquinn@wit.ie

Alternatively, they are welcome to contact the research groups and centres of the graduate school.

Telecommunications Software & Systems Group (TSSG)

Contact: Mr. Mícheál Ó Foghlú

Email: mofoghlu@wit.ie

Centre for Information Systems and Technoculture (INSYTE)

Contact: Dr. Larry Stapleton

Email: lstapleton@wit.ie

Automotive Control Group (ACG)

Contact: Mr. Brendan Jackman

Email: bjackman@wit.ie

Centre for eLearning Technologies Research (WeLearnT)

Contact: Ms. Mary Barry

Email: mbarry@wit.ie

Health Informatics Research Group (HIRG)

Contact: Mr. T.J. McDonnell

Email: tmcdonald@wit.ie

Optics Research Group (ORG)

Contact: Dr. John Houlihan

Email: jhoulihan@wit.ie

Centre for Scientific Computing (CSC)

Contact: Dr. Noreen Quinn

Email: nquinn@wit.ie

The Eugene Lawler Graduate School of Computing offers a range of taught M.Sc. programmes in block release mode. These typically consist of 6 taught modules and a research dissertation, delivered over three semesters.

MSc in Computing (Communications Software)

Chairpersons: Mr. Richard Frisby, Mr. Jimmy McGibney, Email: rfrisby@wit.ie

MSc in Computing (Information Systems Processes)

Chairpersons: Dr. Peter Carew, Mr. Liam Doyle, Email: ldoyle@wit.ie

MSc in Computing (Multimedia and eLearning)

Chairperson: Mr. Patrick Felicia Email: pfelicia@wit.ie

BSc (H) Projects in order of appearance in the book

1. A Mobile Phone-based Shooting Game
Song Xia
2. A Cloud Computing Desktop Solution
Nicholas Gordon
3. An audio forensic application for enhancing noisy recordings
Adam Szurma
4. Charity Income Generator
David Lacey
5. Interactive ICT Application
Holly Byrne
6. Online document management system
Shay Cullen
7. Power Control & Monitoring Software
Cathal O'Connor
8. A website for a record label selling digital audio releases
Shane Tansey
9. Interactive Multimedia Kiosk
Robin Whelan
10. Library Information Management System & BookStore
Yin Christie
11. Android Forensic Data Management System
Barry P. Rellis
12. Pinyin Learning Application For iPhone/iPod Touch
Xiao Qing Yang
13. WIT Campus Navigation System for Android
Assel Kulchmanova
14. Interactive Product Database
Claire Fogarty
15. 2D Side-scrolling adventure game
Peter Cheasty
16. First-Person Shooter Developed With Unreal Development Kit
Brian Cullen
17. eLearning Music Environment for Multimedia Students
John Walsh
18. Hook Peninsula Holiday Planner
Michelle Roche
19. GPG Graphical User Interface
Cian Scott
20. Local Hold'em Poker for the Google Android OS
Cillian O' Driscoll
21. ELearning website to cater for multiple forms of disability
Sarah O'Neill
22. Forensic Timeline Viewer
Conor Walsh
23. Shopping List Application for Android Operating System
John Furlong
24. Development of a 3D Game Physics Engine
Sean Legg
25. Online vocation camp management system
Chen Chen
26. Tactical RPG Engine
Cathal Gahan
27. Android scrolling shooter game
Chuanshi Miao
28. Interactive Puzzle Story for Children
Alannah Mernagh
29. Interactive website for children and educators
Noreen O' Donnell
30. Fantasy NBA
Liantao Zhang
31. Real Time 3D strategy game
Yangzhong Pan
32. Online Technical Support Knowledge Base
Stephen Quinlan
33. TimeStream 2D/3D Role Playing Game
Luke Power
34. iPad Network Vulnerability Application
Shane Connolly
35. Open-source web-based missing persons database
Wayne Whitty
36. E – Learning Tutorial for Micorsoft Word
Danielle Grant
37. Wake on LAN
Vsu Ahuja
38. Hospital Outpatient Registration System
Feng Xie
39. Land Rover Parts Android App
Nick Dunphy
40. Precision spectroscopy of Rubidium gas
Colin Clark
41. Cataloguing of solar flares based on frequency analysis
Daniel Vagg
42. Investigation of Growth Properties of Thin Films
James Hahessy
43. Statistical Wind/Wave Data Analysis
Komal Ali

If you'd like to contact any of the developers, please do so by emailing:

Ian Downey (idowney@wit.ie)

or by using the information on the web sites associated with individual projects

BSc (H) Projects in alphabetical order of developer's surname (numbers prefixed refer to the number of the project in the booklet)

37. Wake on LAN	Vsu Ahuja
43. Statistical Wind/Wave Data Analysis	Komal Ali
5. Interactive ICT Application	Holly Byrne
15. 2D Side-scrolling adventure game	Peter Cheasty
25. Online vocation camp management system	Chen Chen
10. Library Information Management System& BookStore	Yin Christie
40. Precision spectroscopy of Rubidium gas	Colin Clark
34. iPad Network Vulnerability Application	Shane Connolly
16. First-Person Shooter Developed With Unreal Development Kit	Brian Cullen
6. Online document mangagement system	Shay Cullen
39. Land Rover Parts Android App	Nick Dunphy
14. Interactive Product Database	Claire Fogarty
23. Shopping List Application for Android Operating System	John Furlong
26. Tactical RPG Engine	Cathal Gahan
2. A Cloud Computing Desktop Solution	Nicholas Gordon
36. E – Learning Tutorial for Micorsoft Word	Danielle Grant
42. Investigation of Growth Properties of Thin Films	James Hahessy
13. WIT Campus Navigation System for Android	Assel Kulchmanova
4. Charity Income Generator	David Lacey
24. Development of a 3D Game Physics Engine	Sean Legg
28. Interactive Puzzle Story for Children	Alannah Mernagh
27. Android scrolling shooter game	Chuanshi Miao
7. Power Control & Monitoring Software	Cathal O'Connor
29. Interactive website for children and educators	Noreen O' Donnell
20. Local Hold'em Poker for the Google Android OS	Cillian O' Driscoll
21. ELearning website to cater for multiple forms of disability	Sarah O'Neill
31. Real Time 3D strategy game	Yangzhong Pan
33. TimeStream 2D/3D Role Playing Game	Luke Power
32. Online Technical Support Knowledge Base	Stephen Quinlan
11. Android Forensic Data Management System	Barry P. Rellis
18. Hook Peninsula Holiday Planner	Michelle Roche
19. GPG Graphical User Interface	Cian Scott
3. An audio forensic application for enhancing noisy recordings	Adam Szurma
8. A website for a record label selling digital audio releases	Shane Tansey
41. Cataloguing of solar flares based on frequency analysis	Daniel Vagg
22. Forensic Timeline Viewer	Conor Walsh
17. eLearning Music Environment for Multimedia Students	John Walsh
9. Interactive Multimedia Kiosk	Robin Whelan
35. Open-source web-based missing persons database	Wayne Whitty
1. A Mobile Phone-based Shooting Game	Song Xia
38. Hospital Outpatient Registration System	Feng Xie
12. Pinyin Learning Application For iPhone/iPod Touch	Xiao Qing Yang
30. Fantasy NBA	Liantao Zhang

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Ian Downey (idowney@wit.ie)

or by using the information on the web sites associated with individual projects

BSc (H) Projects in alphabetical order of developer's surname in programme group (numbers prefixed refer to the number of the project in the booklet)

BSc (H) in Applied Computing

25. Online vocation camp management system	Chen Chen
10. Library Information Management System & BookStore	Yin Christie
26. Tactical RPG Engine	Cathal Gahan
24. Development of a 3D Game Physics Engine	Sean Legg
27. Android scrolling shooter game	Chuanshi Miao
7. Power Control & Monitoring Software	Cathal O'Connor
31. Real Time 3D strategy game	Yangzhong Pan
1. A Mobile Phone-based Shooting Game	Song Xia
30. Fantasy NBA	Liantao Zhang

BSc (H) in Computing and Forensics

34. iPad Network Vulnerability Application	Shane Connolly
11. Android Forensic Data Management System	Barry P. Rellis
19. GPG Graphical User Interface	Cian Scott
3. An audio forensic application for enhancing noisy recordings	Adam Szurma
22. Forensic Timeline Viewer	Conor Walsh

BSc (H) in Information Technology

37. Wake on LAN	Vsu Ahuja
5. Interactive ICT Application	Holly Byrne
16. First-Person Shooter Developed With Unreal Development Kit	Brian Cullen
6. Online document mangement system	Shay Cullen
39. Land Rover Parts Android App	Nick Dunphy
14. Interactive Product Database	Claire Fogarty
36. E – Learning Tutorial for Micorsoft Word	Danielle Grant
13. WIT Campus Navigation System for Android	Assel Kulchmanova
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29. Interactive website for children and educators	Noreen O'Donnell
33. TimeStream 2D/3D Role Playing Game	Luke Power
32. Online Technical Support Knowledge Base	Stephen Quinlan
8. A website for a record label selling digital audio releases	Shane Tansey
38. Hospital Outpatient Registration System	Feng Xie

BSc (H) in Multimedia Applications Development

15. 2D Side-scrolling adventure game	Peter Cheasty
23. Shopping List Application for Android Operating System	John Furlong
28. Interactive Puzzle Story for Children	Alannah Mernagh
21. ELearning website to cater for multiple forms of disability	Sarah O'Neill
18. Hook Peninsula Holiday Planner	Michelle Roche
17. eLearning Music Environment for Multimedia Students	John Walsh
9. Interactive Multimedia Kiosk	Robin Whelan
35. Open-source web-based missing persons database	Wayne Whitty
12. Pinyin Learning Application For iPhone/iPod Touch	Xiao Qing Yang

BSc (H) in Software Systems Development

2. A Cloud Computing Desktop Solution	Nicholas Gordon
20. Local Hold'em Poker for the Google Android OS	Cillian O' Driscoll

BSc (H) in Physics with Computing

43. Statistical Wind/Wave Data Analysis	Komal Ali
40. Precision spectroscopy of Rubidium gas	Colin Clark
42. Investigation of Growth Properties of Thin Films	James Hahessy
41. Cataloguing of solar flares based on frequency analysis	Daniel Vagg

Sample Disciplines (numbers are project numbers in the book.)

3D Modelling: 13, 16, 24, 31, 33
Amination: 32, 33
Artificial Intelligence: 2, 27, 31
Audio Forensics: 3
Computer-based simulation of physical systems: 40
Database: 10, 12, 13
e-learning: 7, 12, 21, 29, 36
Game Design/Development: 1, 5, 7, 15, 16, 20, 24, 26, 27, 30, 31, 33
Graphics: 1, 7, 12, 15, 17, 18, 19, 21, 24, 26, 31, 32
GUI design: 9
HCI: 4, 9
Networking: 2, 5, 6, 7, 20, 23, 25, 30, 34, 37
Programming: 1, 2, 3, 7, 12, 13, 15, 16, 17, 18, 19, 20, 22, 23, 24, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 37, 39, 41
Scanning Tunelling Microscopy: 42
Security: 8, 19, 22, 34
Signal Analysis: 41
Solar Physics: 41
Story-telling theory and practice: 28

Sample Technologies (numbers are project numbers in the book.)

ActionScript: 28
Adobe Dreamweaver: 5, 6, 8, 10, 13, 14, 18, 21, 29, 32, 33, 35, 36
AJAX: 5, 6, 8
Android: 2, 11, 13, 20, 23, 27, 39
ASP.NET: 32
Bluetooth: 12, 20
C, C++, C#, Objective C: 3, 12, 15, 19, 24, 26, 34, 37
Eclipse: 1, 2, 3, 5, 10, 11, 13, 20, 22, 23, 27, 30, 32, 39
Flash, Flash Builder, Flex: 5, 9, 10, 18, 21, 28, 29, 30
Glassfish Java EE: 2
Groovy: 22
HTML/XHTML: 2, 4, 8, 35
Javascript: 5, 6, 8, 29, 32, 35
JSP: 2, 4, 10, 30
Linux: 2, 24
MySQL: 25, 29
PHP: 5, 6, 7, 8, 13, 14, 17, 18, 21, 35, 36
PlayStation: 33
Rational Rose: 5, 6
RFID: 7
XML: 7, 9, 11, 18, 20, 22, 24, 31, 39

Project 1

A Mobile Phone-based Shooting Game

Song Xia



A mobile game should have the following characteristics:

- easy to Learn: Since the mobile phone game is for the average consumer, not a computer expert, so they don't want to study game skills in depth.
- can be disrupted: multi-tasking lifestyle should be a basic feature of the mobile phone. Mobile users are often carrying out a task for a short time.
- subscription-based: the success of mobile games depends on the profits from their huge usage. Development and design of the beginning of each game is expensive. If a mobile game developer is to profit, then it is important that the same game engine, multiple titles, and stories similar to the original can be re-used.

My game is known as "scenery bridge view" in memory of the bridge from the view out of the central heroes of aviation school.

Disciplines: J2ME, Programming, Graphics, Game Design and Development

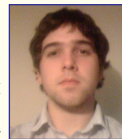
Hardware/Software Technologies: Windows, Java ,Eclipse, MIDP 2.0

Cloudesk

Project 2

A Cloud Computing Desktop Solution

Nicholas Gordon



Cloudesk is a cloud computing operating system, designed for organisations that want to migrate their software and user data from client PCs to centralised servers. Cloudesk's core objective is to enhance sharing and collaboration between users by redesigning how office tools should work for users. Cloudesk's client server architecture ensures its user's data is always available and consistent even if they access it from different locations or on different devices.

Cloudesk will be developed using the highly popular Java SE & EE platforms which allow Cloudesk to support a wide range of operating systems and devices. By moving application processing and data management to centralised Cloudesk servers, IT administrators can benefit from reduced costs and more flexibility. Cloudesk will be developed to integrate with cloud computing systems enabling the automated expansion to available servers during peak times, thus increasing processing performance.

Disciplines: Databases, UI Design, Networking, Programming, Research, Software Development

Hardware/Software Technologies: Windows, Mac OS, Linux, Android, Java Applets , JSP, MySQL, Java SE, Eclipse, Glassfish Java EE, HTML, Servlets

URL: cloudesk.redirectme.net

Project 3

An audio forensic application for enhancing noisy recordings

Adam Szurma



The project is based on the idea of providing a small application for an audio forensic specialist. This application would not be the only resort in a forensic investigation but provide functions typically important and necessary when conducting an examination of a sound recording. The application would read in a voice recording as a wave file, extract all the metadata content and present the end user with the spectrum and the image of the recording. In the case when the file would contain distorted or inaudible speech, the user would have the option to enhance the recording in order to make the speech more audible. The user would have to choose the type of the voice (male/female/child and low/standard/high) possibly present in the recording and the type of background noise (outdoor/music/office/gunshots/car engine) which would be predefined in the application. Knowing these parameters the application would automatically separate the noise from the speech making the speech clearer and more audible. The enhanced recording then could be exported as a .wav file if needed. The user would also have an option of voice comparison: the user would have to choose the comparison option, support the application with two audio files and the application would predict whether the two

voices came from one person. Adhering to forensic requirements the application would also provide a log of the events for further use, that could be later exported to a .txt file. All of the above functions would be brought together by means of a simple graphical user interface.

Disciplines: Programming, Audio Forensics

Hardware/Software Technologies: JAVA programming language, Eclipse IDE, blind source separation, C libraries

Time Rich

Project 4

Charity Income Generator

David Lacey



Time Rich is a social networking based charity income generator, marketing tool and idea think tank. These three functions represent the user categories of the project. Patrons of charities can join the social network and complete activities that will earn their selected charities donations. There are two main activities a patron can carry out. The first consists of completing questionnaires for companies. A company decides how much they want to donate and how many patrons they want to question. They also decide what type of people they want to question such as males that live within 25 km of Waterford city between the ages of twenty and thirty. All patrons who comply with the requirement have the option of completing the questionnaire if they feel the donation size is worthwhile.

The other activity a patron can carry out is watching video advertisements for donations. A company decides who they want to watch their advertisement, how many patrons they want and the amount they will donate. The patron is required to answer a question about the advertisement correctly in order for their charity to receive the donation. It is recommended that any initial question is easy and any follow up questions for an extra donation are more difficult.

Patrons are encouraged to discuss issues such as where they believe charities should spend money and how they could do things better. This information can be accessed by registered charities.

Disciplines: Databases, Web Development, HCI and Systems Analysis

Hardware/Software Technologies: JSP, HTML, MySQL and Tomcat

Project 5

Interactive ICT Application

Holly Byrne



Development of a website that will allow adults (parents) and children to play fun games that will help improve mental agility and hand eye co-ordination. It will also include a colour blindness test and an aptitude test for those thinking of joining the army, navy, air force, marine, coast guard, air national guard and army national guard. All users will be required to register to use the website. This will give the website some extra security. Once the user has registered they can then sign in and they will be shown past results. No one else will be able to see these results. Firstly the user can choose to login as a guest and they will get to see one of the adult and one of the kids' games. Once they have completed their chosen game they will get a message telling them that they will need to register for free to take any of the tests or play any more of the games.

Once the user is registered, any games they complete, will be given a score (e.g. for the brain age game, the previous game age will be displayed and it will tell the user if they are improving or not). It will also tell the user the last date they visited the website.

Disciplines: Databases, Web Design, Web Development, Networking

Hardware/Software Technologies: Windows, WAMP (MySQL, PHP, Apache), AJAX, Adobe Photoshop, Adobe Dreamweaver (JavaScript, CSS), Adobe Flash, Eclipse, Rational Rose

Project 6

Online document management system

Shay Cullen



Efficient Exporting is an online document management system. It can be purchased online and will be used by companies who frequently export goods to countries outside the European Union. The export process involves completing quite a lot of documentation that contains a lot of repeating information.

With this system the user will just have to enter the information once and all the relevant documentation will be populated for them. The user will also be informed of any additional documentation needed that is dependent on the country that the products are being exported to.

Disciplines: Databases, Web Design, Networking

Hardware/Software Technologies: Windows, Mozilla Firefox, WAMP, MySQL, PHP, Apache, JavaScript, CSS, Adobe Photoshop, AJAX, Dreamweaver, Rational Rose

Project 7

Power Control & Monitoring Software

Cathal O'Connor



With climate change and sustainability becoming a more and more important topic, people are trying to reduce their consumption of energy in the hope of reducing their carbon footprint. The aim of this project will be to reduce this consumption through education and intelligent control of devices throughout the home or office. This control will be done by custom built hardware that will give wireless access to the current power usage and the ability to remotely enable or disable power to individual sockets.

There will be a number of components to this project:

1. Server back-end
2. Web interface (used to administer devices)
3. TV interface (used to give current statistics and control from an easy to use interface)
4. Remote communication and control through the use of XMPP.
5. Facebook game (used to incentivise and educate the user to reduce their carbon emissions by being in competition with other users)
6. E-Learning application which can be used as an education tool for schools to show the real world usage and consequences of energy consumption.

Disciplines: Databases, Graphics, Networking, Programming, Behavior-driven Development

Hardware/Software Technologies: Arduino micro controller, XML, Java, Apache, JDBC, JavaFX, MySQL, Xbee, Facebook API, RRD4J, XMPP, RFID, PHP

Project 8

A website for a record label selling digital audio releases

Shane Tansey



The development of a website that will allow a small independent record label to sell releases online in the form of digital audio. By establishing itself online and selling material digitally via the Internet, the label has access to the entire world by default, an immediate global market.

As is the case with the majority of small independent labels, there are generally fewer financial resources available as compared to major labels; by selling music digitally online, it reduces production costs dramatically - CD's do not have to be pressed and cover artwork does not need to be printed (the option exists for the artwork files to be included with the download for the purchaser to print, as is the option of burning the digital audio to CD).

Disciplines: Databases, Web Design, Web Development, Web Security, Databases, Audio, Search Engine Optimization

Hardware/Software Technologies: MySQL, Dreamweaver, PHP, HTML, CSS, JavaScript, Photoshop, AJAX

Project 9

Interactive Multimedia Kiosk

Robin Whelan



The Interactive Multimedia Kiosk is a system which provides visitors and students with information relating to facilities available in Waterford Institute of Technology. This will be provided via an interactive aerial map of the college grounds, that will allow the user to view information at the touch of the screen.

The system will have a dual purpose; each purpose is specific to the users of the kiosk, namely visitors and students. Visitors may query the system and determine information requirements specifically for their needs e.g. Careers department, adult education, registration etc. Students will have the same features provided to them but only receive information tailored more towards their needs e.g. WIT card office, student services etc. An additional feature will provide students with a mechanism whereby they may either enter their student number, or alternatively swipe their student card using the card reader provided. On doing so their current timetable will be displayed, allowing them to choose a room and be furnished with its location together with directions.

Disciplines: XML, GUI Design, HCI

Hardware/Software Technologies: 15" Touch Screen Monitor running on Windows XP, Smart Card Reader -

Omnikey 5321 Dual interface reader , Apache TomCat, Illustrator CS5, Photoshop CS5, Flash Catalyst CS5, Flash Builder CS5, Java SDK ISO

Project 10

Library Information Management System & Online BookStore

Yin Christie



This is a library information management system for college. Firstly, the user could login to the system by choosing the role of user or administrator. A new user can register for themselves. The administrator privilege functions include add/edit/remove an account for either an administrator or user. The administrator can also add/edit/delete a book . A top-up unit is provided to top up the account. It can also play background music or change the skin for the software interface. The administrator could leave a message to user or publish an announcement on the notice board. The user can borrow or return a book. He can search a book by title/author or any other available information. If the book is out of stock, the user could reserve the book. If the book is in stock later, he will receive a notice message. The user is able to view the most popular 10 books in the library or the most 10 active users. He/she can also buy a book using the account if the balance is enough. So, it is a combination of Library System and online bookstore.

Disciplines: Database, Web Development, Java, Flex

Hardware/Software Technologies: Apache Tomcat 6.0, JSP, Flash Builder, SQL2000, Eclipse, Dreamweaver, Struts

Project 11

Android Forensic Data Management System

Barry P. Rellis



Inspector droid is being developed to deal with privacy concerns due to the modern proliferation of the “Smart Phone”, through the use of which users are exposed to an unprecedented level of vulnerability where their personal data is concerned. Mobile devices in the “Smart” category provide the user with capabilities for all of the standard communication media such as, sms, mms, voice and bluetooth as well as several new ones such as wireless 802.11 or GPS. InspectorDroid will allow the user to render his/her data unreadable to an investigator of any type, with the added capability for a secure delete function. This application could be potentially invaluable to the law enforcement and intelligence communities in securing the privacy of sensitive information related to their work, as the nature of data gathered on these devices could be used to great detrimental effect.

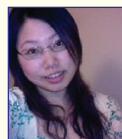
Disciplines: Mobile Technology, File System Forensics, Cryptography

Hardware/Software Technologies: Android OS, Java - Eclipse, XML, SQLite.

Project 12

Pinyin Learning Application For iPhone/iPod Touch

Xiao Qing Yang



Pinyin is the system, which is used to transliterate Chinese characters into the Roman alphabet. It is the phonetic symbol for Chinese characters too. Pinyin is used to make learning Chinese easier. To learn Chinese, you start by learning Pinyin to get the right pronunciation.

This application is designed for the novice learner, who has no knowledge of Pinyin. Users can use this application to learn Pinyin and to search for the right pronunciation of Pinyin. This application will be available for the iPhone and iPod Touch.

Disciplines: Database, Graphics, Programming, Audio of Chinese phonetic symbol, Instructional Design.

Hardware/Software Technologies: iPhone, Mac OS, Xcode, Objective-C, Cocoa Touch Framework, Adobe Photoshop, MySQL

WITNav

Project 13

WIT Campus Navigation System for mobile Android Operating System platform

Assel Kulchmanova



There are a large number of students that begin their academic years at WIT each year and given that this number is growing, students navigating their way around campus has become a major issue for these new arrivals. After reviewing the comments of new students it was evident that locating where they needed to go in this new environment was a source of great frustration. Recent trends have shown a surge in the number of mobile applications being developed, so it was a logical step to create a navigational system for students based on the Android Mobile Operating System.

WITNav allows the user to request a specific destination. It then detects the user's current location automatically and the required destination is shown in an animated 3D environment. The student is able to manipulate the received view, i.e. turn left, see the nearest building, etc.

The uniqueness of WITNav is that the mobile device does not necessarily need to have a GPS feature enabled on the phone.

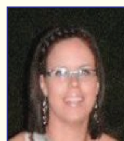
Disciplines: Java Programming, Mobile Development, Web Development, Multimedia, Database Design.

Hardware/Software Technologies: Android SDK for Windows, Eclipse Galileo 3.5, Google API, Adobe Photoshop CS4, Adobe Dreamweaver CS4, PTGui, PHP, MySql, Java, WAMP Server 2.0.

Project 14

Interactive Product Database

Claire Fogarty



Development of a database that will allow businesses to find the materials, equipment etc needed to make a product and be able to enter a new product if needed that is not already in the database. It will help businesses to keep track of materials that they have in their business and also it will store all types of products that they make and if needed allow them to enter new products that they may have decided to make after the database has been implemented. It will work around the concept of a Bill of Material. I also hope to implement it into my father's business as he has no such system.

Disciplines: Databases, Web design and development.

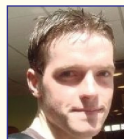
Hardware/Software Technologies: Windows, MySQL, PHP, Dreamweaver

Santa's Adventure

Project 15

2D Side-scrolling adventure game

Peter Cheasty



Santa's Adventure is a 2D side-scrolling adventure game where the player plays as Santa Clause to save the world from the evil Grinch. Santa must gain the control of the four seasons to overcome obstacles and obtain many different powerups to defeat monsters during this adventure.

The game is programmed in Game Maker and C. It runs on Microsoft Windows. The backgrounds for the game are drawn in Adobe Photoshop, and the graphics for characters and objects are drawn in Paint and the YY-Chr graphics editor.

Disciplines: Programming, Graphic Design, Game Design

Hardware/Software Technologies: Game Maker, C, Windows, Paint, Adobe Photoshop, YY-Chr

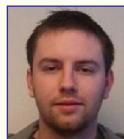
URL: <http://santasadventure.pac.am>

W.M.D.

Project 16

First-Person Shooter Developed With Unreal Development Kit

Brian Cullen



W.M.D. is a first-person shooter developed for PC, taking place in an open environment, with objectives to complete before finishing the game. The player is a soldier, who is tasked with investigating reports of nuclear weapons being prepared at a Soviet-era abandoned city in Siberia. Enemies are soldiers patrolling the area, and will try to prevent the player from achieving their objectives.

I will design and create the game using a professional game development engine called Unreal Development Kit. This engine has been used to create popular games such as Gears of War and Bioshock.

It uses its own version of Object Orientated programming, called UnrealScript. Using SQL, I will create a database, designed to store game data such as character profiles, items collected and saved games. Characters and objects for the game will be created using 3dsMax and imported into UDK.

Disciplines: Databases, Graphics, Artificial Intelligence, JavaDatabases, Programming, 3D

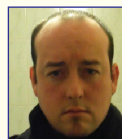
ModellingHardware/Software Technologies: Unreal Development Kit, MySQL, 3dsMax, Windows 7

Project 17

eLearning Music Environment for Introductory

Multimedia Students

John Walsh



The application will allow a student to learn Musical Scales, Octaves and Piano Tones. The student will also learn the basic principles of music theory from using the application.

The environment will be designed as a virtual DAW (Digital Audio Workstation) and the main feature of the application will be a Keyboard where the student can practise each lesson by playing the piano keys that have instructional text placed upon them.

The application also allows the student to progress in their knowledge of music by rating performance and providing feedback.

Disciplines: Programming, eLearning, Graphics, Database

Hardware/Software Technologies: Flashbuilder, Apache, MySQL, PHP, phpMyAdmin

Hook Peninsula

Project 18

Hook Peninsula Holiday Planner

Michelle Roche



It can sometimes be difficult to devise an interesting plan for every day of your holiday, especially when you have a variety of age groups to satisfy. Too often you spend your time looking for places to go, leaving little time for actually doing and enjoying.

This application takes the guesswork out of organising activities by generating a customised itinerary. It will come up with a guided plan, which may be used by tourists visiting the Hook Peninsula, allowing them to input places of interest and to choose a dining experience. Then by collating this information it will set out a daily plan for the user to follow. This will include a map and directions, duration of travel between points, information and opening times of the Places of Interest involved. For those people visiting Duncannon Fort, they can first take a Virtual 360° Tour on the website.

Disciplines: Databases, Graphics, Web development and Programming.

Hardware/Software Technologies: Mac OS X, SQL*Plus, Oracle, XML, PHP, Adobe Flash Builder CS5, Adobe Photoshop CS5, Adobe Dreamweaver CS5, Adobe Flash Catalyst CS5, Panoweaver 6 and Tourweaver 6.

Gnu Privacy Guard (GPG)

Project 19

GPG Graphical User Interface

Cian Scott



The use of computers are increasing every day; purchasing goods online, chatting with friends or family, online-banking etc, all of which can hold sensitive information. This could lead to unwanted people getting a hold of this information if it is not used accordingly. This is why the use of encryption has increased over the past couple of years.

Most encryption tools on the market at the moment require a high level of computer knowledge to understand how to use the application. GPG is a simple and easy-to-use graphical user interface application that will allow users to encrypt and decrypt their files. What makes this application different from the rest is that it will make it accessible for any user. The interface will be very easy to use and explanations of every feature will be provided to help the user understand everything happening in the application.

Disciplines: Graphics, Programming, Security Hardware/Software

Hardware/Software Technologies: Xcode, GPG, Objective-C, Cocoa framework
email address: scottyveo8@gmail.com

Local Hold'em Poker

Project 20

Local Hold'em Poker for the Google Android OS

Cillian O' Driscoll



Local Hold'em Poker is being developed as a completely free-to-play multiplayer Texas Hold'em Poker game that can be operated through local connections, e.g. Bluetooth and an ad-hoc wireless network, on a Google Android OS compatible phone. After research of the available Android games and applications, it has been found that a project of this type is currently not available on the market as of 12th November 2010.

The application will allow users to play two forms of Hold'em – Limit and No Limit. Each player can register their details to keep a record of their results, head-to-heads and an overall league table. The user interface will be simple, yet friendly.

Disciplines: Programming, Mobile Development, Networking, Game Design and Development

Hardware/Software Technologies: Windows, Java SDK, Android SDK, Eclipse Helios, XML, Adobe Photoshop CS4, 2 x Samsung Galaxy Europa GT-I5500

Access all Areas

Project 21

ELearning website to cater for multiple forms of disability

Sarah O'Neill



Access all Areas, an eLearning website, aims to provide a fully accessible, web-based learning environment. People with disabilities can partake in online tutorials in a fully accessible manner with an interface that is aware of their needs and accommodates them. The website will allow users to register their profile, log in to the learning environment, follow tutorials and complete quizzes online. The website aims to cater for the following forms of disability: Low vision, Colour blindness and Motor disabilities.

As learning styles and learning restrictions will vary with the people who will use the eLearning website, different user views will be created depending on the user's profile and the details they have stored about themselves when registering.

Disability affects millions of people around the world each day. Currently, around ten percent or roughly 650 million people live with a disability. Of this 650 million, an estimated 386 million are of working age. Unemployment amongst people with disabilities is as high as eighty percent in some countries. This presents a serious need for making all information and learning readily available and accessible for all persons.

Web accessibility is concerned with creating an application or website that is accessible to *all* computer users. An *accessible* website is often easier to navigate and read, on top of being faster to download in a web browser.

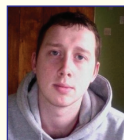
Disciplines: Database, Graphics, Web Development, Accessibility, Usability.

Hardware/Software Technologies: Windows, PHP, MySQL, CSS, Adobe Photoshop CS5, Adobe Dreamweaver CS5, Adobe Captivate CS5, Adobe Flash CS5.

Project 22

Forensic Timeline Viewer

Conor Walsh



From personal use to industry, the use of and advancement of technology in every walk of life is always rising. Along with this rise in the use of technology there is also a rise in cyber crime and computer misuse.

The aim of this project is to develop a tool that will help system administrators or forensic investigators view a timeline of events that have occurred on a targeted machine. The timeline viewer will go through various system files and data sources to find information that will be valuable such as browser history and installation records. This information will be stored. Depending on the user's queries, the information required will be displayed to them in a timeline. It will provide a high level view of the activity on a machine allowing them to see exactly what happened and when.

Disciplines: Programming, Web Development, Security

Hardware/Software Technologies: Groovy, Java, Eclipse, Grails, Tomcat, Mac OS X, XML

Smart Shopping List App

Project 23

Shopping List Application for Android Operating System

John Furlong



The Smart Shopping List App is designed to reduce the stress of the weekly grocery shopping trip. This application will allow users to add items to a list or lists over a period of time and edit or delete the lists as they see fit. It will make use of a number of different input options in order to create and edit a list. These include the inbuilt keyboard, camera, barcode scanner and/or speech recognition. Users will be able to specify a particular item's quantity and the quantity type such as kilogram, box, bottle, carton etc... The application will be developed for the Android Operating System using the Eclipse IDE.

Disciplines: Programming, Mobile Development, Databases, Networking

Hardware/Software Technologies: Google Android SDK, Eclipse IDE, Adobe Photoshop CS5, Adobe Illustrator CS4, SQLite, Wi-Fi, Android Mobile Device.

Project 24

Development of a 3D Game Physics Engine

Sean Legg



Current 3D physics engines are either very limited in functionality (e.g. Box2D, Chipmunk) or full of features with a steep learning curve (e.g. havok, PhysX). The aim of this project is to develop a comprehensive engine that can be used to teach the fundamental concepts of physics for use in games.

This project is to develop a cross-platform 3D physics game engine using open source based tools for the purpose of demonstrating fundamental concepts of game physics.

In particular the developed engine should be cross-platform and open source and documented to a high level of detail to allow its use as a teaching aid. It will at least support, particle and 3D rigid body dynamics with multiple collision but with the potential to include support for exible objects - cloths, etc and fluids should the time be available.

Disciplines: Programming, 3D Graphics, Scripting

Hardware/Software Technologies: Windows, Linux, Mac, C++, LUA, XML, OpenGL

Cool Camp System

Project 25

Online vocation camp management system

Chen Chen



Cool Camp system is being developed for winter and summer camp users. The system is designed to do some operations in relation to users, classes, details of the camp and to share interrelated information during. By using the system, the users can share information wherever they are when they have an Internet linked computer. It is more convenient for the marketers and customer servers to start relationships with the cooperation units or customers, and it will be easy for the users inside the camp to get real-time information. Additionally, the manager could get the customer's situation in real time instead of waiting for the final report after work, so that s/he could send the order or change the disposition in a timely manner.

Disciplines: Databases, online management, Networking, Information exchange, Web set design

Hardware/Software Technologies: Windows, MySQL, .net, Visual studio 2008, web server, client computer

Cross War

Project 26

Tactical RPG Engine

Cathal Gahan



Cross War is a Tactical Role-Playing Game for the PC in the vein of titles such as "Fire Emblem". The player controls a small force of characters with varied abilities and personalities in turn-based combat with computer-controlled foes, slowly uncovering a complex plotline.

Special attention will be paid to making the game customisable, so that players can use it as an engine to create their own games.

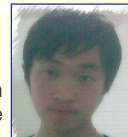
Disciplines: Programming, Graphics, Audio

Hardware/Software Technologies: Windows, C#, XNA, GIMP

Project 27

Android scrolling shooter game

Chuanshi Miao



This project is a scrolling shooter screen game called Universe Defender based on the Google Android platform for mobile phones. The main character is a user plane that shoots and hides from the enemies during its life.

When the user enters the game for the first time, the welcome screen, which is tagged with the game logo, is shown to the user. Then there will be a menu for the user to choose. It presents the choice of game mode. The user can choose whether to have sound during play and so on. While playing, the user can control the plane in any directions by the arrow keys and using the space key to shoot the enemy plane. The android OS is touch screen, so we can change the screen in the horizontal direction.

The game play flows with three to five different levels, the availability being determined by keeping the plane in enough time to see the end of one level. The enemy's AI will become more and more difficult as time goes on. The sound effects such as explosions will surprise the player, and that makes the game more interesting.

Disciplines: Java programming, Game Development

Hardware/Software Technologies: Android HTC phone, Android SDK 2.1, Eclipse Galileo, java, Windows XP.

Project 28

Interactive Puzzle Story for Children

Alannah Mernagh



This project presents an adventure of two characters, monkeys as it so happens, named Charlie and Mattie, as they make their way through part of Africa to escape a monster intent of avenging a perceived wrong-doing. In the end all works out well. The child using the adventure story is encouraged to make choices on behalf of the two monkeys that will allow them to avoid dangerous situations.

Disciplines: ActionScript 3.0 programming, graphic design, user interface design, effective imaginative child-oriented story-telling theory and practice.

Hardware/Software Technologies: Adobe Flash CS4 and related software development tools.

Project 29

Interactive website for children and educators

Noreen O' Donnell



An e-learning website for children from the age of 3. The website will give the user the option of registering and viewing their activities. The user will learn through song and video for the most part, starting off with the basic ABC's. There will be several different educational characters in the website that the user can view and learn about. Also included, will be a section for parents and educators where they can learn about games and activities for children. These activities will be suitable for use both at home and in pre-schools.

Disciplines: Web Design and Development, Programming, Databases.

Hardware/Software Technologies: Windows, Adobe Dreamweaver, JavaScript, Tomcat, mySQL, Adobe Flash

Project 30

Fantasy NBA

Liantao Zhang



This is an online game; people should register first then after login to this game, every user has €100 to buy 10 players to create a team. When you finish that, you can create a league or join other leagues. Every league has 20 teams; from your 10 player-squad you select 5 players to play with other teams each Gameday. If you get to be the league champion, you win money. When you have enough money, you can buy a player from the dream team. Every player's information can be got from NBA.COM.

Disciplines: Database, Web Development, Networking, Programming.

Hardware/Software Technologies: Java, MyEclipse, JSP, MySQL, Tomcat.

Project 31

Real Time 3D strategy game

Yangzhong Pan

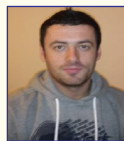


This game has similar features and scenes as a standard RTS game, like warcraft 3, has. In the game world, the purpose of the game is to collect resourcea, and use them to construct buildings and train an army. There are a number of types of unit, eg. Famer for collecting resources and constructing; knight and shooter can damage an enemy. The goal of the game is to defeat one's AI opponent. The game also provides a "map editor" to let player create their own map.

Disciplines: programming, 3D Modeling and 3D Graphics, AI, Game Design and development,

Hardware/Software Technologies: Windows, XML, Lua, 3ds Max, Visual studio, Subversion.

Stephen Quinlan



To design and develop an online technical support helpdesk where users can navigate through a knowledge base to solve their technical queries. The knowledge base provides a description of the problem and when expanded will give a list of the appropriate solutions. There will also be embedded animations and diagrams that give the user a better picture on how to solve a technical problem.

If the users cannot solve the problem using this knowledge base they will submit a query to the I.T. departments help desk and this query will join others on the I.T. department's task list. When the job is added to the task list an email will automatically be sent to the user specifying that the query has been added to the list and will be dealt with accordingly. From the information submitted the I.T. department can generate statistical reports from its findings. From these reports the administrator can determine if there are any patterns emerging with regard the networks; this will help them to monitor user activity and manage the network more efficiently, e.g. if there are continuous problems with a certain laser printer on the network this will be recorded each time and may lead to replacement of the printer.

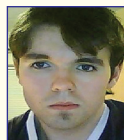
Disciplines: Database, Programming, Web development, Graphics

Hardware/Software Technologies: Windows, MySQL, ASP.NET, Adobe Dreamweaver, CSS, JavaScript, Eclipse

TimeStream

TimeStream 2D/3D Role Playing Game for Windows OS, Xbox 360 and PSP.

Luke Power



TimeStream has been developed as an action Role Playing Game mainly using the RPG Maker XV as a development platform. The game is played on Windows OS as well as on Xbox 360 and PlayStation Portable hardware. Observing the current trends of the game industry will show a lack of traditional 2D RPG being developed, yet after much research it becomes clear there is a great appreciation and demand for them.

The game allows users to engage in high intensity battles, featuring strategic elements as well as traditional RPG elements. The player assumes the role of a time traveller and traverses a large number of different time periods. The design is based around stylised contemporary versions of each time zone while the story is conveyed using a branching dialog system and 3D cut scenes.

Disciplines: Programming, PSP Development, Xbox 360 Development, Web Development, Game Design and Development, Music/Sound Design and Development, 2D Graphical Design, 3D Graphical Design, Animation, Creative Writing.

Hardware/Software Technologies: Windows, Xbox 360, PSP, GML, RPG Maker XV, Autodesk 3D Max 2010, Adobe Photoshop CS4, Adobe Dreamweaver CS4, Acid Music Studio 8.

iPad Network Vulnerability Application

Shane Connolly



An iPad application which returns the version of services that run on hosts on a connected wireless network. Using a database of known vulnerabilities the app will allow system administrators to keep their applications patched and up do date. The app will also have tutorials for " Home Users " with best practices on how to keep their home LAN's safe.

The App will be released to Apples iTunes Store and will be available worldwide to all iPad users.

Disciplines: iOS Development, Programming, Networking, IT Security.

Hardware/Software Technologies: iOS SDK, Xcode, Interface Builder, Objective-C, Cocoa Touch Framework, iPad.

Project 35

Advanced open-source web-based missing persons database.)

Wayne Whitty



OverWatch is an advanced web-based “missing persons” database that anyone with access to a web server can install. It allows both front-end users and administrators to refine detailed searches on a large database of missing persons. The application’s first priority is to raise awareness about missing people. In order to do this, it harnesses the popularity of social media websites and platforms by allowing visitors to easily embed widgets on their blogs and social networking profiles. Its secondary priority is to act as a detailed analysis tool for charity organizations, social bodies and law enforcement agencies. Users of the system are given the means to carry out advanced searches. For example, if a user wishes to search for 40-45 year old males with blonde hair and brown eyes who have gone missing from a distinct geographical location, then he or she can do so using the search tools that are available. Another interesting aspect of the system is that it gives the administrator the ability to define patterns. These patterns can help the administrator to recognize trends and figure out whether there are distinct social problems in a specific area or if there is any evidence or indication of foul play. Once a new person has been added to the system, the application automatically checks to see if that person’s addition to the database triggers a match with any of the pre-defined patterns. If a pattern has been identified, the application creates a notice and sends an email to the administrator or another email address of his/her choice.

Disciplines: Object Orientated Programming, Database Design, Graphic Design, UI Design, Web Development, Rapid Application Development

Hardware/Software Technologies: PHP, MySQL, XHTML, CSS, JavaScript, JQuery, Dreamweaver, Photoshop, WAMP

E – Word Learning

Project 36

E – Learning Tutorial for Microsoft Word

Danielle Grant



E – Word is an e – learning website that teaches users who might not be computer literate how to use Microsoft Word. It will be free for all users and it will teach them about all the functions of Microsoft Word.

In today’s current economic climate there are a lot of people who are trying to get back into employment and this e – learning site will teach them how to create their CV’s, create a cover letter, write reports and so on. With this website the user will have the option to just browse through to see what it has to offer but to access the tutorials a user must register for an account and log in to gain access.

Disciplines: Web Design, Databases, E – Learning

Hardware/Software Technologies: Dreamweaver, PHP, Flash, MySQL, Adobe Photoshop, CourseLab

Project 37

Wake on LAN

Vsu Ahuja



Wake-on-LAN is an Ethernet computer networking application that countenances a computer to be turned on or woken up from shut down state by a network message until it is supplied with power. The message is usually sent by a program executed on another computer. The Wake-on-LAN application is implemented using a special network message called a magic packet; this packet contains the Media Access Control address of the destination computer. The listening computer waits for a magic packet addressed to it and then initiates system wake-up. This is implemented on the motherboard of the system so it works for every operating system.

This application may be written in C++ with a user friendly interface and putting it over the internet to facilitate the user being machine independent. It will not only wake the system from shut-down mode but also if system is in hibernate or standby mode, a feature that most of the applications on web do not

support. This application favors users who use Remote desktop connectivity software. This means that this application, on any platform, can wake up computers running on any other platform and even outside the local network. If time allows, I would like to design the system further to implement a Wake on Wireless LAN. This entails a computer being woken through communication via wifi.

If we look theoretically then we see that a computer users 100 watts for 24 hours if it is on and its screen is turned off. So if we look forward and calculate the cost for a year it would be about €112.30 and this is for just one employee in a company. Additionally it releases heat to the environment and adds to global warming. So with this application, computers no longer need to be kept turned on in order to connect remotely but can be turned on as and when required. It also saves a lot of time and hassle as the user does not need to go physically to the desk to turn it on during a system crash or any other failure.

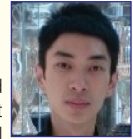
Disciplines: Programming, Web development, networking.

Hardware/Software Technologies: Operating systems, Visual C++, Remote Desktop connection, Machine access code, Apache Tomcat 6.0.

Project 38

Hospital Outpatient Registration System (HORS)

Feng Xie



The rapid development of network technology brings more and more convenience, and also improves the efficiency of working. For these reasons, the Hospital Outpatient Registration System (HORS) was created. This system can be to provide personal information to patients registered, check medical information, patient records, counseling information and consumer features, e.g., the patient can use the system to register, to make an appointment for a consultation, to pay of bill, to get a receipt medicine. Additionally, the doctor can use the system to check his/her work, to collect information relating to patients and to research diseases.

Disciplines: Database, Web Development, Management Information System, Distributed Information Systems.

Hardware/Software Technologies: MySQL, Java Server Pages, Java Development Kit, SQL Server 2005, Tomcat 6.0.

LR Parts App

Project 39

Land Rover Parts Android App

Nick Dunphy



Land Rover Parts Android App is being developed to allow mechanics working on Land Rovers to use their Android Smartphones to go online to browse the complete parts database for Land Rover. They can then select the parts they wish to buy using Paypal. Once the purchase is complete the parts are shipped. The idea of the app is to save the mechanic time and money. The app will use the Android development kit, Sqlite database and Eclipse amongst other technologies.

Disciplines: Java Programming, Databases, Web Development

Hardware/Software Technologies: ADT, Sqlite, XML, Windows, Eclipse, Android Emulator

URL: www.Irspecialist.ie

Project 40

Precision spectroscopy of Rubidium gas

Colin Clark



Grating-tunable semiconductor lasers can be used to perform high-precision spectroscopy and sensing of many different gaseous species. In this project, the absorption and dispersion properties of Rubidium gas will be investigated using such a setup. In addition, the response of the gas to an external magnetic field will be studied and used to reveal fundamental properties of the gas such as the Zeeman splitting and Faraday rotation.

Disciplines: Optical interferometer design and control, Data processing, Computer based simulation of Physical systems

Hardware/Software Technologies: Labview, MATLAB

Project 41

Automatic cataloguing of solar flares based on frequency analysis.

Daniel Vagg



The aim of this project is to investigate the cataloguing of solar flares based on frequency analysis of solar data obtained primarily from the LYRA instrument of the PROBA-2 satellite in collaboration with ESA (European Space Agency).

Solar flares are large explosions in the Sun's atmosphere which involve the heating of plasma to tens of millions of degrees and acceleration of electrons, protons and heavier ions to near the speed of light. Most flares occur in regions near sunspots and are powered by a sudden release of magnetic energy stored in the sun. Solar flares are of significant interest as they have the potential to disrupt communications on Earth and pose radiation hazards to spacecraft and astronauts.

Recent analysis has indicated that there are distinct frequencies embedded within some solar flares. For example, a solar flare which occurred on the 13th of June 2010 contained two frequencies during the flare at approximately 0.03Hz and 0.0145Hz. This project will result in solar flares being characterised based on their embedded frequency, and later being catalogued based on this characterisation.

Disciplines: IDL programming, Solar Physics, Signal analysis, and Pattern recognition.

Hardware/Software Technologies: IDL, SPICE, and the PROBA-2 satellite.

Project 42

The Investigation of Growth Properties of Thin Films by Scanning Tunneling Microscopy

James Hahessy



The aims and the objectives of the project are to study the epitaxial growth of gold films using scanning tunnelling microscopy. This study should lead to the production of atomically flat films of gold which can be used for molecular self assembly experiments. To achieve atomically flat surfaces, a substrate of atomic flatness is required. Atomically flat substrates can be achieved by cleaving mica or by piranha washing a glass microscope slide. Gold will then be thermally evaporated on to these surfaces at pressures of less than 10^{-6} mbar. The thickness of the film will be controlled by a quartz crystal microbalance mounted inside the evaporation chamber. Preheating of the substrate and post annealing of the sample will be used to promote the development of flat terraces.

The lattice mismatch between gold and silver will be exploited as a means to promote the ordering of the evaporated film to the Au(111) crystalline structure. In this case a thin film of silver will be pre-deposited on to a mica substrate, post annealing and subsequent deposition of gold will be carried out at low pressures.

Scanning tunnelling microscopy (STM) will be used to image the fabricated surfaces. The nanotechnology research group's STM will provide image capability down to atomic levels. To achieve atomic resolution it is important to have atomically sharp tips. Tips will be fabricated by electrochemically etching gold with in a calcium chloride electrolyte.

The physics department's STM will be investigated and set up to achieve high resolution imaging with atomically sharp tips. The capabilities of both systems will be compared.

Disciplines: Scanning Tunnelling Microscopy, Scanning Electron Microscopy, Atomic Force Microscopy, thermal evaporation of metals, and data analysis.

Hardware/Software Technologies: Edwards AUTO 306 thermal evaporator, NanoSurf EasyScan Scanning Tunnelling Microscope (STM), STM built by NanoTechnology group, Scanning Electron Microscope, Veeco Explorer Atomic Force Microscope, Gwyddion data analysis package.

Project 43

Statistical Wind/Wave Data Analysis

Komal Ali



The aim of this project is to analyse various forms of statistical data provided through different sources. The data will be the measurements of windspeed and wave heights. The data provided will be converted to tabular as well as graphical form using a statistical package R and MATLAB. The data will be summarised and displayed into suitable descriptive statistics and graphs. It is also possible that future assumptions be made through the representation of data.

Disciplines: Wind and Wave energy.

Hardware/Software Technologies: R and MATLAB

The Information and Communications Technologies (ICT) sector plays a very significant role in Ireland and other countries. In Ireland, this sector comprises more than a thousand organisations ranging from multinationals to start-up companies. Up to 60% of ICT activity in Ireland is communications related including wireless applications, infrastructure and telecommunications.

Recent years, however, have seen changes within these industries that could result in lower value activities moving to low cost countries. The best way to counter this, from an Irish perspective, is to create higher value-added jobs in ICT and in converged communications research in particular. The increased level of public investment in ICT research and development in recent years, mainly by Science Foundation Ireland and Enterprise Ireland, has been motivated by this strategic goal.

At the heart of the profound change in the ICT sector is the convergence of telecommunications and Internet technologies and the emergence of large-scale, open networks that can provide all kinds of services. The telephone service is becoming just one of several available, and all these services are being provided increasingly over the Internet. People want so-called ‘pervasive’ presence – the ability to be connected wherever and whenever they choose, regardless of location. To facilitate this, we will progressively see computing and communications facilities embedded into our ‘smart’ homes, cars and shared public spaces. At the same time, we will want to protect our privacy and to trust the security of communications and transactions we make using this emerging infrastructure.

Recognising these trends, Waterford Institute of Technology has offered, since September 2005, a taught MSc in Computing that specialises in Communications Software. This MSc specifically addresses the major thematic areas of the ICT sector that are perceived to offer best prospects for growth, particularly in an Irish context. These areas include communications management, service development, security and new developments in ubiquitous and pervasive computing.

For further information about this programme, please contact:

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**Dissertations in order of appearance in the book
(alphabetical order of author's surname)**

- | | |
|--|---------------|
| 1. A scalability study into Node.js for long running HTTP requests | John Frizelle |
| 2. Emerging web technologies for 3-D graphics in mobile devices | Brian Power |

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Project 1

A scalability study into Node.js for long running HTTP requests

John Frizelle



HTTP is a stateless protocol which does not support the notion of the web server pushing data to a client. This limitation is often overcome by the use of long running HTTP requests. In traditional, thread based web servers, these long running requests are typically problematic as each request ties up a valuable request handling thread. Node.js is an event-based web server written entirely in JavaScript which uses an event loop rather than threads to provide scalability.

This project seeks to compare the performance of a traditional thread based web server (Tomcat) against the Node.js event based model to determine if Node.js is better suited to handling long running web requests, and how the duration of the web request affects the system performance.

Disciplines: Programming, Load/Performance Testing, System Monitoring

Hardware/Software Technologies: JavaScript, Java, Node.js, Tomcat, HTTP, Jmeter

Project 2

An exploration of emerging web technologies in the context of three-dimensional graphics on mobile devices

Brian Power



With the continued adoption of HTML5 by modern web browser vendors, a shift away from the use of browser plug-ins for Rich Media on the World Wide Web is emerging.

The goal of this project is to explore the capabilities of emerging web standards such as HTML5 in conjunction with current web technologies such as JavaScript, in the context of three-dimensional graphics. The project will then compare their equivalence to that of the more traditional native technologies currently in use, such as Objective C and Java. The purpose of the exploration phase of the project is not only to incorporate these web standards to produce three-dimensional graphics, but also to benchmark their performance in a selection of popular web browsers both on desktop and mobile devices.

This project also aims to benchmark native programming languages (e.g. C++ & OpenGL / Objective C & OpenGL ES) against HTML5, JavaScript & WebGL to explore the feasibility of using newer web technologies as a practical alternative to programming on mobile devices.

Disciplines: Web Development, Mobile Application Development,

Hardware/Software Technologies: WebGL, OpenGL, OpenGL ES, HTML5, JavaScript

MSc in Computing (Information Systems Processes)

This one-year full-time Masters degree programme aims to produce graduates with knowledge, skills and expertise in Information Systems. The course will also confer on the graduates a set of personal and professional attributes that will allow them greater flexibility in the development of their own career options.

Specifically, the course aims to produce graduates who can:

Reason and problem-solve to a high level in the context of information systems and its role in business, industry and research.

Participate constructively in the deployment of information systems.

Participate in the development of high-quality information systems products.

Undertake research-based projects for industry, providing effective advice and leadership where required.

Manage information systems-based projects that require the handling of innovation and change in dynamic environments.

For further information about this programme, please contact:

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**Dissertations in order of appearance in the book
(alphabetical order of author's surname)**

- | | |
|---|-------------------|
| 1. Implementation of ICT in the classroom | Paula Carrick |
| 2. Efficiency of Web-based language learning | Zheng Chen |
| 3. HR technology and an organisation's strategy formulation | Ann Clancy |
| 4. Hotel Information Systems | Ting Fan |
| 5. Use of Business Models in Small Technology-based Firms | Paul Howe |
| 6. CRM systems in restaurant industry in Ireland and China | Caiqin Jiang |
| 7. Automatic Travel Customer Service | Jian Li |
| 8. e-marketing to SMEs | Xian Mei Meng |
| 9. adoption of mobile e-payment systems and services | Arnauld Mesinga |
| 10. Addressing Web services security concerns in SOA | Awkash Modi |
| 11. Feasibility Study for RFID-based Inventory Management | Shousong Ning |
| 12. Future of Intrusion Detection Systems in E-commerce | Oludare Olateju |
| 13. Web services security with Service Oriented Architecture | Mahesh Thummala |
| 14. The staff management by objective system | Hong Wang |
| 15. CRM in building brand loyalty | Jin Wang |
| 16. Parental Attitudes and Technology-Enabled Bullying | Catherine Winters |
| 17. Company's Future On Sustainable Development with ERP | Qi Wu |
| 18. Comparison of campus smart card adoption in USA and China | Xue Yang |

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Project 1

Implementation of ICT in the classroom

Paula Carrick



The study will be based upon ICT (Information Communication Technology) in secondary level schools from an Irish context, focusing on the South East region. Previous work carried out in this area tends to focus on a more global scale. The review of the literature gathered indicates the implementation of ICT in the classrooms across Ireland today is growing constantly. Identifying the value that ICT provides for schools has challenged researchers since the 1980's. One of the main issues was developing a basic understanding of the technology and how it impacts on the students learning (Baylor & Ritchie, 2002). According to Gulbahar (2005) technology integration significantly impacts students learning in areas such as writing, cooperative learning, increased communication with teacher and it enhances global studies for the student. The implementation stage of introducing ICT into schools is a lot more challenging than one may think. Change management is a huge area which requires a lot of attention when implementing ICT into schools. Means, Olson & Singh (1995) highlights the introduction and complication of implementing IT into the classroom may be quite "daunting" for some. This can be difficult for the change management team as there will often be resistance in these situations. According to Baylor & Ritchie (2001) teacher's openness to change was a correlation of how proficient they are with using the technology. This would suggest that if schools are having problems with staff they need to encourage them to adopt the implementation of ICT into the school, appropriate action must be taken. For example to inform staff of the sufficient training that will be provided for them would encourage them to be more open. This study will focus on providing an overview of the impact ICT has on the school environment, the implementation stage and how to manage the transformation in the classroom.

Project 2

Efficiency of Web-based language learning

Zheng Chen



This dissertation is a study about what the efficiency of the web-based language learning will provide for the different levels students and make the research of what types of learners will find this study method will be effective. These students could be some kids, youths, adults and some elders who interested in the others language. With the learning from the internet, people could learn the languages of others and give the students a try to know another country's culture. Contribute to world cultural exchanges and development. The goal of this research is to investigate the effectiveness of web-based language learning.

Project 3

Can HR technology usage indicate the level of contribution of HR in Irish organisation's strategy formulation

Ann Clancy



The hierarchy of HR value can be portrayed in the shape of a pyramid, with the most fundamental levels of value i.e. the tradition basic administration requirement at the bottom, and at the top of the hierarchy is the transformation of the role into that of a strategic business partner. Technology is a recognised enabler for facilitating the change of the HR focus from administrative to one that can play a strategic organisational role. Assuming that the level of maturity of an organisation's HR groups organisation can be indicated on a continuum from basic administration to strategic partnership, this study will research an organisation's position on the value pyramid and the availability and use of HR technology by the HR professionals and the managers to determine the HR technology contribution level to strategy formulation. Research into HR technology is extensive in the context of large developed countries but there is currently little HR technology research to date on within Irish indigenous organizations.

Project 4

Hotel Information Systems

Ting Fan



The modern hotels does not only provide a place for guests to sleep; it integrates various kinds of facilities and services. There are so many service items within the hotel that huge amounts of information need to be controlled and well-controlled in the daily management process. With the development of information technology, computers and network plays a crucial role in hotel management. Through the adoption of new technology, the hotel can deal with various information sources and better organise the service to customers. This helps to manage the hotel's daily work at lower cost, improve the hotel's service quality and improve the employee's productivity and management capacity

Project 5

Utilisation of Business Models in Small Technology-based Firms in the South-East of Ireland.

Paul Howe



Business model research suggests that failures in Small Technology Based Firms (STBFs) can often be attributed to the incomplete implementation of an appropriate business model. Some key areas of concern are poor strategic planning, limited business acumen and expertise and the recruitment and retention of skilled and experienced staff. Given the importance of Small and Medium Enterprises (SMEs) and STBFs to the Irish economy, the aim of this research is to examine the perceptions and utilisation of business models in STBFs in the south-east of Ireland.

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Project 6

CRM systems apply to restaurant industry in Ireland and China

Caiqin Jiang



Customer relationship management (CRM) is a business strategy that manages a company's interactions with their customers, clients and sales prospects. In today's intense competitive environment, hotels are a typical example of an industry that requires CRM systems to establish and maintain long-term relationships with customers. CRM systems will facilitate companies to correctly analyze their needs, in areas like customer retention and attraction of potential new customers.

However, the success rate of CRM implementation is not too high. There are a variety of reasons that cause CRM projects fail, such as unclear CRM strategy, poor planning or project management and choosing the wrong CRM provider. The purpose of this study is to identify the usefulness of CRM systems to the Hotel industry and investigate the differences between the use of CRM between hotel industry in Ireland and China. This research will analyse the benefits offered by the 2 larger CRMS systems, SAP CRM and Oracle CRM and try to establish which of them is best suited to the Hotel industry in the chosen countries. The research will try to identify the attitudes and perceptions of hotels and their stakeholders towards CRM systems.

Project 7

Automatic Travel Customer Service

Jian Li



In this information & technology age, people can get many sources and services by new ways, which are the benefits from smart technology. For those travelling fans, it seems that they can increasingly get information and self-services.

The topic I want to research for my dissertation is mainly about the application of automatic travel service system and its management aspects, which I focus on the management of this service system in the information system. It is computer-based system.

To be specific, there will be some theories and approaches about how to build (service quality and service cost) and manage a good service system (strategies and implementation) that can make the automatic travel system successfully to be realized. To a further step, it is also very crucial about the evaluation of travelling information service system.

Project 8

e-marketing to SMEs

Xian Mei Meng



In the later 1990s, the European commission adopted a recommendation to establish the first common definition for small and medium-sized enterprises in the EU. From 2002 to 2008, Micro, small and medium-sized enterprises act a core functions in the EU economy. In the EU, there are 27 countries SMEs grew quickly and turned out to be the job engine for the EU economy. SMEs are one of the most significance and vital determinant of well-being in the whole Irish economy.

The purpose is to provide benefit of e-marketing to SMEs and to describe the type of e-marketing tools, such as Search engine optimization (SEO), online public relations (E-PR), email marketing, affiliate marketing viral marketing and so on. Then analyze Irish SMEs in relation to the utilization of e-marketing.

Project 9

Determinants of user adoption of mobile e-payment systems and services for microfinance institutions in developing countries–Case study Cameroon

Arnauld Mesinga



Most software based products have been developed for use in developed countries and are exported for use to developing countries. The outcome is the under utilization of information and communication technologies in developing countries as they do not suit the needs of the users in these countries. The focus of this research will consider the development of financial ICT solutions in particular mobile e-payment systems and services that can be suitable for use by customers of microfinance institutions in developing countries. The research will examine the various technical and non-technical user centred design factors necessary for the software application development of mobile e-payment systems for microfinance institutions in developing countries.

Project 10

Addressing Web services security concerns in SOA.

Awkash Modi



In present world, the Service Oriented Architecture (SOA) holds very high importance. This is due to rapid change in technology and technology infrastructure which demands quick customer service with ease. It increases the rapidness and transparency of business processes.

Security can be a major concern for an organization that provides web services. This piece of research finds out the different security problems faced by them and the measures that should be taken by the organization to address these problems.

Project 11

Feasibility Study of Implementing an RFID-based Inventory Management System in Small Local Businesses

Shousong Ning



Short shelf life goods present some of the biggest challenges for supply chain management. Object identification applications require the identification of multiple objects and at the same time reliability and minimal user intervention. A Radio Frequency Identification (RFID) based data capture system can help solve the problems associated with the logistics of short shelf life products. It is a cheap and error proof alternative to traditional object identification techniques such as barcodes and visual recognition. Zebra Technologies developed a print engine that can embed an RFID transponder directly into a product label. This research investigates how using RFID technology can increase the efficiency of the supply chain for small local businesses.

Project 12

The Future Direction of Intrusion Detection Systems in E-commerce Industries

Oludare Olateju



The extent of technology expansion in today's application exploration (especially web based technologies), internetwork management functions and recently the emergence of cloud computing has given the impetus to improve and develop intrusion detection systems especially in E-commerce industries considering the level of required security of peoples data, fraud prevention, business credibility to mention but few.

Software and hardware IDS vendors need to keep pace with network traffic elasticity, a constant reliable analysis and correlation of intrusion detection systems is what makes the difference between the current intrusion detection systems and what the future intrusion detection system should entail.

Project 13

Addressing Web services security with Service Oriented Architecture (SOA).

Mahesh Thummala



Summary: In present world, the Service Oriented Architecture (SOA) holds very high importance. This is due to rapid change in technology and technology infrastructure which demands quick customer service with ease. It increases the rapidness and transparency of business processes.

Security can be a major concern for an organization that provides web services. This piece of research finds out the different security problems faced by them and the measures that should be taken by the organization to address these problems.

Project 14

The staff management by objective system

Hong Wang



Competitive pressures force enterprises to further tap their core competitiveness. On the one hand, enterprises adjust their product structure to meet market needs. On the other hand, a variety of methods are used to improve the management level and tap internal resources to achieve resource optimisation. Many large enterprises have moved cost management to be at the centre of the enterprise management and combined it with enterprise goals to implement staff management by objectives.

The staff management by objectives system is a systematic and organised approach, which heavily rely on IS technology in respects of communication, information exchange, management and etc cross different internal departments, where staff uses self-control and self-management techniques to participate in their individual work goals in order to achieve the enterprise level goals. The staff management by objective system has clear targets in each level of enterprises, thereby, providing a more objective and fair evaluation of staff which can greatly stimulate the staff's initiative to improve efficiency.

This dissertation will utilise a case study approach to comprehensively explore the implementation of staff management by objective system in certain enterprises and to determine its benefits.

Project 15

Customer Relationship Management (CRM) implementation in building brand loyalty

Jin Wang



With economic development, competition in the market shifted from the product to the customer, competition is not only about product or service but also about customer relationship. Sometimes, brand reputation or brand royalty is the reason why consumer wants to buy the product or service. Creating a brand need spend lots of time and costs, after formed brand, the lead for future purchase of goods by emotion than by reason. Customer Relationship Management (CRM) is a business strategy built based on the concept of being customer-centric. The main goal is to optimize revenue through improved customer satisfaction via improved interactions at each customer point of communication. It needs to understand the customer, to understand the environment their lives and what concerns they have by evaluating the usage of the products the company offer or service that is provided. With extend from industrial revolution to the digital age, the network provides a new tool to help company establish a brand. CRM in this era plays an important role.

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Project 16

An Investigation into Parental Attitudes and Behaviours Surrounding Technology-Enabled Bullying.

Catherine Winters

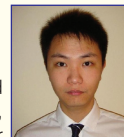


Online bullying has been defined as “an aggressive, intentional act carried out by a group or individual, using electronic forms of contact, repeatedly and over time against a victim who cannot easily defend him or herself” Smith (2008). The objective of this research is to investigate the attitudes, behaviours and perceptions of parents, regarding online bullying using technological enabled devices.

Project 17

Company's Future On Sustainable Development with ERP

Qi Wu



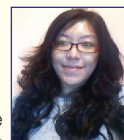
Enterprise Resource Planning, refers to the use of information systems, integration and automation of all internal processes and resources, including materials, inventory, scheduling, Invoicing, accounting, human resources, etc., has been seeking lower communication costs, improve internal efficiency, enhance The competitiveness of enterprises.

ERP is the core of management thinking to achieve the effective management of the entire supply chain. ERP represents the most advanced production management model and technology, with advanced manufacturing technology, information technology continues to evolve, the current generation of ERP will be developed. ERP system will eventually be extended further to the supply chain management, the formation of XRP (Extended Resource Planning). Existing ERP system in the supply chain management function also cannot meet the needs of the enterprise, therefore, for supply chain management ERP software XRP will become the inevitable trend of future development. XRP is no longer a simple system, but rather a series of modules like ERP integration. Purpose is to enable enterprises to improve service quality, quick response to the market, take the initiative to predict and motivate customers and market information at any time according to plan, coordinate the entire supply chain operations, gain competitive advantage.

Project 18

Comparison of campus smart card adoption in third level colleges in America and China

Xue Yang



Today's college and university environments offer one of the best opportunities for the adoption of smart card technology. Hence, a substantial amount of smart card development has already taken place at universities and colleges for several years, particularly country like in the US and some EU countries. Yet, there is very little literature about the concept and ideas on the philosophical and practical implications of smart cards in China and American. Therefore, this research should involved investigating the response of two groups (experienced and non-experienced) towards the adoption or the intention to embrace the technology of a university smart card. It explores the students' attitudes and perception forwards smart card in American and China, and the possibility of developing smart card as a university application and investigates whether it will help to reduce the university business administration procedures to enhance their student life. However, comparing the use of smart card technology between the two countries, the results also show an insightful picture for a technology innovation in China and American.

MSc in Computing (Multimedia and e-Learning)

This one-year full-time Masters degree programme bridges the gap between technology, multimedia and pedagogy. The overall aim of the course is to produce graduates with the necessary knowledge, skills and expertise within both Multimedia Development and Elearning. The course will also confer on the graduates a set of personal and professional attributes that will allow them greater flexibility in the development of their own career options.

Specifically, the course aims to produce graduates who can:

1. Reason and problem-solve to a high level in the context of multimedia development tools and eLearning platforms and their role within business, industry and research
2. Participate in the development of high-quality multimedia and eLearning educational products
3. Undertake research-based projects for industry, providing effective advice and leadership where required
4. Manage technology-based projects that require the handling of innovation and change in dynamic environments

The course is delivered part-time and full-time.

For further information about this programme, please contact:

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**Dissertations in order of appearance in the book
(alphabetical order of author's surname)**

- | | |
|--|----------------------|
| 1. 3D video game for fire safety training | Jianzhao Cai |
| 2. AI to allow learning for Non Player Characters in FPS games | Brendan Kelleher |
| 3. Game-related website | Zen Zen Liu |
| 4. Pronunciation of 3rd level non-native English language students | Luqui Lu |
| 5. Use 3D and Virtual Reality to learn history | Xudong Ma |
| 6. Utilising 3D Gaming and User Profiling to promote game based learning | Cronin O'Mahoney |
| 7. On virtual reality and gaming technology | Jitsupa Piyadit. |
| 8. E-Learning Application based on Instructional design models | Sravan Sangepu |
| 9. The Use of Podcasts as M-Learning in a Contemporary Social Context | Katie Sheehan |
| 10. Advanced E-learning principles & techniques with AJAX | Amarjith Shivarathri |

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Project 1

3D video game for fire safety training

Jianzhao Cai



My thesis is about how to use virtual reality and game technologies to give people fire safety training. It will investigate the possibility offered by virtual environment in order to reduce the risks of fire drill and increase the learning and motivation on the part of the trainee. The aim of this study is to investigate how to build a more safe and convenient system to train people fire safety. In this study I propose to create a video game which includes virtual reality technology in order to increase learning outcomes.

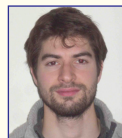
What is most important thing in the world? The answer is life. So we must to take care of our life better. In current world, fire happens frequently once the fire happens people need to know what they should do to save themselves. So fire safety training is very necessary, however, there are a lot of disadvantages of traditional fire safety training. That's why I try to find a new way to train people fire safety. Currently, although VR technology is a mature field, it seems that very few researchers have tried to combine VR and game technology in order to train people fire safety. Users can use computer to have the fire drill at home, don't need to go to the fire safety training school to have the training, which make everybody have the chance to get the fire safety training. VR can provide a truly interactive experience to users may improve their sense of immersion, their motivations and their willingness to learn. Training via playing game can make the users don't feel bored.

These applications may teach people to learn the fire safety skills in order to escape from the fire when it happens.

Project 2

Using Artificial Intelligence (AI) so as to incorporate learning for Non Player Characters (NPCs) in First Person Shooter (FPS) games.

Brendan Kelleher



Video games today have synthetic characters that are often involved in complex interactions with human players. However this apparent intelligence is usually carried out through the use of event-driven scripting. This often leads to dull and predictable game play. The goal of this project is to incorporate AI techniques into NPCs in a FPS video game to create more believable and human like characters, thus heightening the player's motivation and enjoyment. This involves modifying NPCs' behaviours by incorporating two different AI techniques into their programming and comparing them with those of event-driven NPCs.

Disciplines: Games Design, Artificial Intelligence.

Software Technologies: Game Engines, C++, JavaScript.

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Project 3

Game-related website.

Zen Zen Liu



With economic development, competition in the market shifted from the product to the customer, competition is not only about product or service but also about customer relationship. Sometimes, brand reputation or brand royalty is the reason why consumer wants to buy the product or service. Creating a brand need spend lots of time and costs, after formed brand, the lead for future purchase of goods by emotion than by reason. Customer Relationship Management (CRM) is a business strategy built based on the concept of being customer-centric. The main goal is to optimize revenue through improved customer satisfaction via improved interactions at each customer point of communication. It needs to understand the customer, to understand the environment their lives and what concerns they have by evaluating the usage of the products the company offer or service that is provided. With extend from industrial revolution to the digital age, the network provides a new tool to help company establish a brand. CRM in this era plays an important role.

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Project 4

Adopting a musical intelligence approach in a multimedia e-learning environment to improve the pronunciation and accent of third level non-native English language students

Luqi Lu



My thesis adopts a musical intelligence approach in a multimedia e-learning environment to improve the pronunciation and accents of non-native English language third level students. After many years of traditional language English teaching methods, many third level Chinese students still have poor spoken English, experiencing problems with communicating in English because of difficulties with pronunciation and accent. According to Gardner's theory (1983), different people have different types of intelligence, my hypotheses suggests that a multimedia e-learning environment may be a promising way to improve language learning. A karaoke style multimedia application, for students with musical intelligence, will make use of their natural abilities in "recognising different musical pitches, tones and rhythms" (Jackson, A. 2009) to improve pronunciation and accent. A case study methodology will be used following karaoke style multimedia teaching sessions given to a sample group. This group will be compared to a control group to test if a musical intelligence e-learning approach has improved students' learning outcomes.

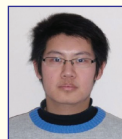
The features of the system include: Flash based karaoke style technology, Music, rhythm, pace, pitch components, Speech recognition and comparison components, Assessment and rating against a native speaker benchmark.

Hardware/software: Multi-platform. Flash

Project 5

Use 3D and Virtual Reality to learn history

Xudong Ma



Currently, 3D and Virtual Reality is very popular, we have plenty of 3D games and 3D films, almost all of the young people are interested in 3D, it is more vivid than 2D, but only a small quality of teacher use it as a good way to teach student. There are many web sites just use picture and text to show the history, but I think use 3D is better than picture to show it, it will improve their motivation, and their willingness to learn. My dissertation will investigate in use 3D and Virtual Reality to learn history in order to increase the motivation of students to learn the history. The aim of this study is to investigate how students can easy to learn history. In order to make it easily, in my project I propose to use Unity 3D or Virtual Reality to develop a 3D game to show the history, the game will be almost the same as the historical events.

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Project 6

Utilising 3D Gaming and User Profiling to promote game based learning

Cronin O' Mahoney



It is proposed that an immersive game be created which will teach environmental awareness in a manner which will appeal to the digital generation. The game will take place in a 3D environment and will encourage the participants to interact with this environment in a way which will both teach the syllabus and entertain at the same time.

The study will also research the use of user profiling in gaming to tailor the gaming experience more to the individual user. The more the users are engaged then the more likely they are to keep playing and therefore further their knowledge of the games subject area. It is proposed that a profiling algorithm will be put in place to garner the players' ability at 'gaming', and thus adjust the level of difficulty to match their competence level. I believe this study could help prove the validity of game based learning through the weaving of pedagogy into a 3D game.

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Project 7

Improving manual handling training effectiveness with Virtual Reality and gaming technology

Jitsupa Piyadit



"This project aims to improve manual handling training by applying Virtual Reality and gaming technology in order to reduce a work-related musculoskeletal disorders(WMSDs) and other health disorder. It makes it possible to address restrictions and issues linked to current manual handling methods, enable trainees to practice manual handling skills before the actual manual handling tasks."

Disciplines: Programming, Game Development, E-learning, Multimedia, Virtual Reality
Hardware/Software Technologies: Unity 3D, Cinema 4D, Poser

Project 8

E-Learning Application based on Instructional design models

Sravan Sangepu



Developing a system based on Instructional design models which allows to teach in different ways and allowing users to assess which one is the most suitable. Each system will use features and methodologies based on some of the models. This system will allow the users to select any one of the learning system for example if a user wants to learn through questions and selecting the correct answer from given four options or if a user wants to learn through powerpoint presentations or else if a user wants to learn through video tutorials. The system also allows users to enable/disable some of the features like sounds, pictures etc. that are included in the system. The system will also keep track for each model of the features that the user has selected or preferred. The system also stores the data based on the rating system for each learning system that the user has given. In short explanation this is an E-learning Application system or a website developed based on three instructional design models that allows users to select any one of the E-learning system. The three E-learning systems are questions with four options and selecting correct answer from these four options, second

E-learning system is that a user can learn through powerpoint presentation, the third E-learning system is that a user can learn through video tutorials.

Disciplines: Database, Programming, Web Development, Video and Audio
Hardware/ Software Technologies: PHP, MySQL, JavaScript, HTML, CSS, Ajax.

Project 9

The Use of Podcasts as M-Learning in a Contemporary Social Context

Katie Sheehan



The Impact of Mobile Learning (M-Learning) in a non-academic environment. M-Learning is the use of mobile devices to enhance learning throughout all age groups. The widespread use of mobile devices such as mobile phones, iPods, tablet PCs, laptops, mp3 players etc. enables people to learn at any location and at any time. Wireless technologies are available in most public places allowing easy access to information on a mobile device. Most mobile devices are Wi-Fi enabled and can access information instantly in a Wi-Fi environment. The research will involve the use of Podcasting as a form of learning. The purpose of the study will be to determine if education can be improved by using mobile devices and the factors that influence the successful impact of podcasts for learning.

Disciplines: M-Learning, E-Learning
Hardware/Software Technologies: Flash, Flex, Podcasting
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Amarjith Shivarathri

Generally education website allows users to learn in same kind of learning type, which is not good for the user because some users' learning method is different from other. One more problem in current e-learning systems have a some drawbacks in its processing that can be problem for the student who is intended to get all satisfaction while he/she is learning. In this case I got a one good solution for above problems. I plan to develop a e-learning web site with new Ajax technology, we can develop faster, smarter and richer website use this technology. In my website first system giving some questionnaire, once the user answer the questionnaire, then system find the users learning type and pages displays accordingly(For example user interested in videos all learning information displays in videos). After studying each concept they wish to attend the questionnaire at the same time, it improves the student confidence. Student saves and access important point in any time using Ajax technology. In the final questionnaire system give some questions about the subject. Whenever a user enters an answer into a textbox or selects radio button, Ajax sends this information to the web server is found to be incorrect, a hint displayed just below the same textbox or radio button without any page refresh.

Disciplines: Database, Programming, Adaptive Education, E-learning.

Hardware/Software Technologies: ASP.Net, C#, SQL Server, Store Procedures, AJAX

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