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**Project Selection Brochure**

**March 2014**

Brochure for the selection of individual project

for the partial fulfillment of the requirements for the degree of

MEng in Computer Science

Swansea University Department of Computer Science

Introduction for Level-M projects

Welcome to the final year of your study in Computer Science, Swansea University. This brochure introduces available industrial (individual) projects to level M (MEng). Before looking at the projects and deciding which project is right for you, please spend some time and read the following paragraph to understand what makes level M project different than level 3 project:

# Level M Projects vs Level 3 Projects

The Level 3 project is an individual project that is *curiosity-driven.* You are expected to produce a substantial piece of work - but it does not have to be what you initially set out to do. It just has to be a significant body of high-quality work. In contrast, CS-M14 is intended to more closely model the real software development process. In particular, there is an emphasis on *delivery.* That is, you will be assessed on *how well you have met the initial stated goals*. This has significant consequences for how the projects are assessed, and how you should undertake them.

**Project milestones**

**Initial Requirements**, **Specification and Methodology**: These documents describe what you intend to do and how, as well as the risks you expect to face and what you have done about them.

**Interim Report:** A description of the progress you have made on the project and any issues that have arisen.

**Presentation, Manuals, Testing and Reflection:** A presentation on the project, appropriate user and testing documentation, and a reflective account of the project. The last of these is the only one that you would not be expected to produce in a real project.

# Industrial Project - Project Selection

The project is chosen in a similar way to Level 3 projects from a list of suggested projects (some industry-related). You will be asked to select a project in the same way you did last year, fill in the form at the end of this document and send it to Chris Whyley (Room 206 special box provided). Students can also propose their own projects in the same way as at Level 3 (they need to get the agreement of a member of staff to supervise it). Unlike your project choice in Level 3, there are important restrictions on the projects you can choose or propose:

1. They must be **practical** and involve the **production of a** **piece of software**.
2. They must have **well-defined goals**, or be amendable to have well-defined goals.

As an example of a project with well-defined goals, consider a project: ‘Write a software application to manage undergraduate admissions in computer science’. This project has a clear goal and is practical - the software to be produced is not clearly specified yet, but that is OK (and forms the first part of the project). However, consider a project: ‘X has written a new paper on something very interesting - why don’t you see what you can do with it?’ This *does not* have well-defined goals. However, it *could* still be a suitable project - *provided by the time the specification must be written the precise goals of the project have been finalised.* This depends on the exact project, the supervisor, and you. However, it’s obviously a risk - and you need to limit risks in MEng projects - and so such projects must be considered very carefully.

**Note:** Industrial Project (CS-M14) has 40 credit points.

The following list present **projects suggested by a member of lecturing** **staff and industrial related projects**. Based on the experience of a member of staff in supervising MEng projects, extent, depth, and potential of the project proposal to become a strong software engineering project, projects are carefully chosen. Sometimes project proposals go along with the research interest of a staff member: in these cases you can be sure to get optimal supervision.

**Industrial related projects** can be real career openers. Should you do well, the company might actually offer you a job. There are, however, some potential pitfalls. Sometimes, the company loses its interest in the project during the course of the year. Then, it will be hard to arrange meetings in order to get input for the project. Also, you will serve two “masters”: Your supervisor at university and the company itself.

**Own projects** allow you to follow your own path and do what you always dreamt about. In order for you not to struggle, the department requires that you find a member of teaching staff who will support your proposal. The risk in such a project is that, naturally, you don't have much project experience - and your potential supervisor might not be too familiar with the subject of your choice.

**To get an idea about MEng industrial timeline visit the MEng Project Handbook in the blackboard.**

Note that the deadlines given in this document in the blackboard will be updated in **Summer 2014**.

**NOTE 1:** Dr Parisa Eslambolchilar (Current head of MEng) is going on sabbatical from July 2014 ( for 12 months). To receive any information regarding MEng after July 2014, please contact Dr Neal Harman (n.a.harman@swansea.ac.uk).

**NOTE 2:** You have to submit your selected projects (see the forms in the end) to **Mr Chris Whyley** by 5th of May 2014 (**not later**).

Dr Parisa Eslambolchilar

March 2014

Projects suggested by members of staff

**Dr Daniel Archambault**

**DA –M1 Spatializations for Topic in Social Media (two students can select this)**

In previous projects, we have looked at time varying topic for microblogging/social network data with respect to specific users. Although this perspective of the data is interesting, often we would like to see the degree of similarity between the users of these services, de-emphasizing the temporal perspective. In this MEng project, we design an implement software that presents spacializations for topic. These spacializations (you can think of them as maps of social media data) could exploit either the link structure or language of the present in the networks. The project requires excellent graphics programming skills and knowledge on how to collect Twitter data. Strong mathematical knowledge, especially in geometry, is an asset for computing these spatializations.

**Dr Arnold Beckmann**

**AB-M1 Bottle Blow - An Interactive Music Generation Tool**

You may have been at a party were people used bottles to play a piece of music by first emptying them to various levels, and then blowing across the top of them to make notes.  The "Bottle Blow" project is based on this idea.  The aim is to produce an online tool where users have to record notes (in whichever way, not necessarily using bottles) of given pitches.  These recording are then used at fixed places in a fixed piece of music, which then can be played, downloaded as a ringtone etc.

**AB-M2 Environment Mapping with LEGO Mindstroms**

The project is about aspects of environment mapping using the Lego Mindstorm robots.  The idea is to use special distance sensors to build a kind of radar, transmit the data to a PC where the data is visualised.  Using this visualisation, the user shall be enabled to steer the robot "blindly" through an unknown terrain.  At the same time, the application shall produce a map of the environment which has been explored.

The project is suitable for a student with good programming skills, and an interest in LEGO Mindstorms.

**Dr Jens Blanck**

**JB- M1 Declarative approaches to HPC**

Investigate the advantages of declarative programs for HPC. An implementation of some parallel algorithm is expected to be produced as an example implementation, e.g., k-means clustering or standard algorithms from Graphics,: edge detection, smoothing, etc.

Requires some knowledge of parallelism and Haskell.

**JB-M2 Declarative user interfaces**

Functional reactive programming (FRP) is one approach to user interfaces that allow

programmers to write user interfaces without having to resort to various call-backs in order to achieve good performance. This project aims at understanding FRP and implementing user interfaces in FRP (likely in Three-penny GUI).

Requires some knowledge of Haskell.

**JB-M3 Implementing AGM algorithms**

To compute high precision approximations of transcendental functions require good algorithms. Arithmetic Geometric Mean algorithms are known to be among the best available. Implementation of at least the natural logarithm is expected. Implementation language can be discussed, but Haskell is suggested.

Requires some interest in Mathematics.

**JB-M4 Graph layout algorithms**

Given a finite graph, we would like a 2D or 3D representation of the graph that is easy to understand for a human (limited crossings, etc.). One popular method for doing this is to mimic physical systems with springs (or other forces) guiding the nodes to a low energy state. Language independent project.

**JB-M5 Process algebra language translation and tools**

Parse the process algebra language in Prof F Moller's CS-175 and generate an internal graph representation of the corresponding LTS. Implement the graph colouring algorithm to determine all bisimilar processes. Extensions such as understanding the logic M are desirable. Haskell is recommended, but this is open for discussion.

**JB-M6 Industrial project with Dezrez**

Dezrez is a company that provides back-room systems for independent estate agents. This project is not yet confirmed, and the topic is not settled. Contact me if you are interested.

**Dr Rita Borgo**

**RB-M1 Gesture Based Interfaces.**

Question: are touchscreen the way forward? Is touchless interaction an option?

Project description:  C.G. effects like MK12 “*Stranger than Fiction*” [1] or IronMan J.A.R.V.I.S.,  show the potentials of touchless gesture control. In this project we aim at recreating a J.A.R.V.I.S. like interface governed by touchless gesture control. We will aim at evaluating the effectiveness of touchless interfaces against traditional interaction paradigm (mouse, keyboard, touchscreens). We will make use of gesture control equipment like Leapmotion or Kinect sensors (depending on availability).

Outcomes: The main aims of the project will be: 1) create a usable touchless interface 2) integrate the interface with a motion sensor (either Kinect or leap motion devices depending on availability), 3) evaluate effectiveness of a touchless interaction vs. more traditional types of interactions.

[1] MK12 – *Stranger than fiction* <http://www.youtube.com/watch?v=WDwTQ57YyzI>, last accessed March 21, 2014.

Type of Project: HCI, Graphics, Software Development

**RB-M2 Low cost Augmented Reality (only ONE student)**

Question: low-cost augmented reality equipment is finally becoming reality,

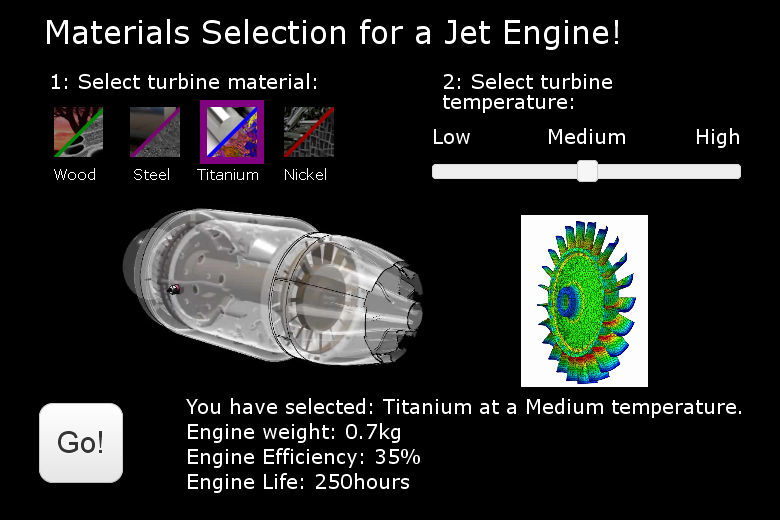
Project Description: Rendering stereoscopic 3D images is nowadays a simple task, however the accuracy of the final result is key. In a synthetic environment dangers of poor stereoscopic renderings range from eyestrain and headaches, to users feeling noxious in the virtual world, to rapid loss of interest. In this project we will look at the issue of rendering accurate stereoscopic images within an augmented reality device such as the Oculus Rift, we will also look at augmenting the level of interaction with the synthetic environment by integrating the Rift with an external motion sensor.

Outcomes: The main aims of the project will be: 1) render 3D stereoscopic images within the Oculus Rift environment, 2) integrate the Rift with a motion sensor (either Kinect or leap motion devices depending on availability), 3) evaluating interaction with the synthetic environment with and without motion detection sensor.

Type of Project: Graphics, Visualization, Software Development.

**RB – M23 (In Collaboration with Engineering Dr Will Harrison W W.Harrison@swansea.ac.uk) Interactive ‘Materials Selection’ application for public engagement**

The aim of this project is to develop an interactive web app for presenting simple a materials science problem to the public. The app should consist of a single web page, optimised for mobile devices making use of touch inputs. The activity involves the user selecting options from 2 or more inputs, then outputting the results as an animation based on the contents of a lookup table. The app should be visually appealing with good usability. The skills required for this project are anticipated to be proficiency in the use of HTML5, CSS and JavaScript (JQuery) with an enthusiasm to create animations in HTML5.

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**Dr Neal Harman**

**NAH – M1 Programmatic Integration with Microsoft Office Web Apps**

**Business contact: Mark Delgado, HiTec Laboratories**

*Requirements Background :* Today, if a software solution requires interaction with Microsoft Office in anything other than the most trivial of ways, this can only be achieved through the use of the core MS Office APIs or via the creation of an “Add-In” that runs inside the MS Office applications themselves. Both of these solutions require that custom software is developed and installed on every user desktop.

This model is largely inappropriate for many of today’s business process and systems. Not only does the reliance on thick client deployments or MS Office application Add-Ins increase both the development and deployment challenges, but it also often degrades the user experience and makes the solution far more complex to use.

The growth of Cloud-based and SaaS (Software as a Service) solutions present additional constraints. In these environments, installing software on users’ desktops is simply not an option.

The ability to view and edit MS Office documents directly from within a user’s web browser is, therefore, becoming more and more desirable.

*Technical Background*

Microsoft Office Web Apps (OWA) provides a web-based interface giving users the ability to view and manage Microsoft Office documents in a platform neutral, thin client browser environment on desktops, laptops and tablets. It forms one of the cornerstones of the Office 365 initiative – “MS Office in the Cloud”.

Many of Microsoft’s cloud solutions (such as OneDrive, Outlook.com and MS SharePoint) now integrate with OWA to provide seamless, embedding of document viewing and editing functionality. In addition, enterprises are able to host OWA Servers connected to local document repositories on their own servers enabling them to be integrated with enterprise (closed-network) deployments of MS SharePoint and MS Exchange Server.

Although no APIs currently exist for OWA integration with software solutions, Microsoft provide open, Web Service-based protocols detailing how a third party systems may communicate directly with an OWA server. There are two main protocols that have been defined:

* MS\_WOPI defines the protocol for document reading and editing
* MS-FSSHTTP defines the protocol for collaboration and synchronisation.

*Project Requirements*

By implementing endpoints supporting the salient elements of MS-WOPI and MS-FSSHTTP it is theoretically possible to offer embedded viewing and manipulation of MS Office documents from within a proprietary browser-based application, solution or business process on desktops, laptops or tablets without the user having to download the file and use their own, installed copy of MS Office.

The project, therefore, is to implement a prototype for these endpoints to prove the feasibility of doing so, to determine their suitability for use within a production environment and to highlight any potential deficiencies or pitfalls in a fuller implementation.

The assignment would require the research student to work from information contained within the Microsoft specifications for the MS-WOPI and MS-FSSHTTP protocols and to supplement this with detail and examples gleaned from examining and analysing, at a network level, the browser/server interaction of MS Office Web Apps with Microsoft’s own endpoint implementations such as within MS SharePoint and OneDrive.

**Dr Mark Jones**

**MWJ-M1 Ray Tracing and Kd-Trees**

The first part of the project will be to implement the technique of ray tracing as demonstrated in the level 2 Graphics course. The primary areas of coding will be the 3D viewing transform, an efficient triangle intersection test, the Phong shading model, the use of an open source mesh reader, texture mapping and a kd-tree. A second part will be to incorporate more visual effects. For example aspects of global illumination and BRDFs into the ray-tracer to provide high quality images. C++ would be appropriate for this.

**MWJ-M2 Visualisation of Biological Data**

Biologists in Swansea attach data collection devices to animals for the purpose of collecting accelerometer data, magnetic field intensity and environmental data (pressure, light, temperature). This data is collected at 8Hz for long periods of time (e.g. hours to days). The aim of this project is to apply visualisation techniques to the data to aid the biologists in the analysis of their data. Examples of existing work can be seen here:

[http://www.swan.ac.uk/compsci/research/graphics/biologySensor/](https://webmail.swan.ac.uk/owa/redir.aspx?C=3e4bb8b0fc7d4dd88caadc31bb64cb70&URL=http%3a%2f%2fwww.swan.ac.uk%2fcompsci%2fresearch%2fgraphics%2fbiologySensor%2f)

Already, these novel visualisations have led to interesting discoveries about animals in their environments. Of particular interest for this project will be to further investigate the spherical histogram plots (see website), carry out further behaviour analysis (accelerometer data can used to determine what animals are doing) and try out other realistic rendering of animal motion (see the shark animation on the web site). It is suggested that the work is carried out using OpenGL for rendering the visualisation techniques as it is easier to learn than DirectX. Although it is possible to use Java and the JOGL bindings, C++ is preferred. If the DirectX route is taken, I have some code and examples to help you get started (in C++). It is also possible to use managed code (C#).

**MWJ-M3 Data Interaction**

This follows from the above project. We would like to control a windows application from a tablet and/or Kinect. This project will create a piece of software (middleware) that can fill the event queue with appropriate events (mousemove, double click, etc.) that have been interpreted from interaction with a tablet and/or Kinect. Therefore the first part of the project will be to try to insert events into the event queue. The next part will be to create a tablet app that communicates the interaction across the network to your middleware, and the final part will be to do the same for the Kinect.

**MWJ-M4 Infographics**

This is a software engineering project suiting a good programmer. The aim is to produce a system that replicates [http://infogr.am](http://infogr.am/) but rather than jpg or png output, it will produce a vectorised output (e.g. SVG). This can be accomplished in several ways. For instance, you could create an engine that takes as input the spreadsheet and some other parameters, and creates as output an SVG file. In this case the software would almost be regarded as a compiler. At the other end of the spectrum, a nice GUI can be created, like infogr.am, to do the same task. In some ways you can progress from one to the other by creating the first version, then creating a GUI that interfaces with your application. Including all of the chart types might be a little too ambitious for the project, but I expect once one is implemented, the techniques are going to be so similar for the others that it might not be such a difficult achievement. It would be nice if good software engineering practices could be followed so future students could develop it further by including more chart types and adding further output formats (e.g. postscript).

<http://en.wikipedia.org/wiki/Scalable_Vector_Graphics>

**MWJ-M5 Medical projects**The research internships brochure listed some medical projects under my name. Variations on those projects are also available as undergraduate projects.

**Dr Ben Mora**

**BM-M1 (Up to two students): Demos for the RayTracing DirectTrace SDK.**

The DirectTrace library is a new C/C++ library that allows programming Ray-Tracing applications without the hassle. It is based on a new innovative algorithm for Ray-Tracing that is focusing to real-time applications and performances are state-of-the-art. The library is made of various tools to ease the programmer task, including automatic computation of ray-tracing intersections and an OpenCL-accelerated shading language. A software development kit is available at www.DirectTrace.org, which allows programmers to understand better the library and how to use it. The SDK would however benefit from including new demos:

* A global illumination example implementing a path-tracer combined with environment maps, consisting of loading a scene to the library, and creating shaders for generating random paths of rays and blending samples.
* A real-time ambient occlusion demo that would estimate local lighting without the having to compute a full global illumination solution

In this project, you will for instance re-use a first implementation of a chess board and add some global illumination effects to make the board display look very realistic. This will mainly consists of generating new rays in a biased way that implement the chosen lighting model.

**BM-M2 Pong revisited: A Ray-Traced implementation.**

As of today, almost all 3D games use rasterization techniques (Direct3D, OpenGL) to display 3D surfaces. Ray-Tracing is known to provide better quality, but is also generally too slow to be considered for real-time applications. The project will be about implementing a new 3D pong game, with the possibility to switch from an OpenGL renderer to a Ray-Tracing renderer using the DirectTrace library (see description above). As the two library interfaces are similar, the main difficulty will reside in implementing the game itself.

Students are also welcome to propose alternative 3D applications/games that could benefit from ray-tracing (Tetris, Chessboards, etc...).

**BM-M3 Image and Video Compression**

The student will implement and assess the quality and suitability of some common transforms (Fourier, Wavelets, etc...) to image and video compression. The project will have to be implemented in C/C++, or more precisely refactored from some source code already available from a previous signal-processing project.

**BM-M4 Toward a faster way to write C/C++ code.**

As writing large C/C++ programs may not be an efficient task, you will be in charge of designing a tool that allows faster generation of C/C++ code. This may either take the form of a simplified grammar, a graphical language, or more general tool that generates C/C++ files from another type of files. This may also require investigating OCAML or how to create plugin extensions to visual studio. The exact requirements will be decided from a discussion with the student interested in this project.

**BM-M5 A streamed Ray-Tracing shading language.**

This project aims at simplifying the writing of shaders for Ray-Tracing using a stream-based language that will look more like an ml language (e.g., OCAML). This language will then be translated into calls to the DirectTrace library.

**BM-M6 A web application to enter sport data.**

In many amateur sports, scores have to be entered on a sheet of paper and communicated to officials by mail. This project will simplify the task by allowing sport amateurs to directly input the scores inside an online system. The system may also display other types of information like player statistics and ranking according to the results entered.

**BM-M7 Physics in Game Engines.**

The bullet library allows simulating various collision and deformation effects in games. Depending on your level of studies, you will be in charge of: assessing the library performance in OpenCL, creating one or many demos illustrating the use of the library, and possibly writing your own collision detection algorithm.

**Professor Peter Mosses**

**PDM – M1 BibTeX bibliography tools**

The BibTeX format is widely used in Computer Science for publication data. Various digital libraries (ACM, IEEE, DBLP, etc.) support export of publication data in the BibTeX format. Unfortunately, the quality of the BibTeX data is generally quite poor, which can lead to inaccurate, incomplete and poorly formatted reference lists.

Various tools have been developed check and transform BibTeX data. An open source collection of such tools is available at <http://www.math.utah.edu/~beebe/software/bibtex-bibliography-tools.html> . However, the need to install the software locally makes the tools inaccessible to many BibTeX users. The proposed project is to develop a web interface to these bibliography tools.

This project would suit students interested in web applications and user interface design; previous knowledge of BibTeX is not required.

**PDM-M2 Domain-specific language development in Spoofax**

A domain-specific language (DSL) is a language intended to facilitate the implementation or modelling of a limited class of systems. Use of a DSL generally allows developers to focus on specifying systems concisely, at a high level of abstraction, avoiding the tedious and distracting implementation details that can arise when using a general-purpose language such as Java or UML. For example, Perl can be regarded as a DSL for searching and string processing.

The Spoofax Language Workbench [<http://strategoxt.org/Spoofax>] supports development and implementation of DSLs together with IDEs for those languages. The proposed project is to use Spoofax to develop a parser and editor for some existing DSL. It would best suit a student interested both in grammars and in object-oriented programming.

**Dr Anton Setzer**

**AGS-M1 A novel Computer Based Time Management System (CS-354)**

Because of the Internet the amount of opportunities is increasing at a fast speed, which means as well that the number of possible tasks is increasing fast. Many computerised task management systems have been developed, for instance the website

<http://www.priacta.com/Articles/Comparison_of_GTD_Software.php>

lists 164 different systems, some of which are free and others are very expensive. Such systems allow to delay the displaying of tasks until they become relevant, sorting using different criteria, and support automatic scheduling of tasks. Despite this huge amount of systems and their maturity, many developers of techniques for time management still recommend paper based systems or simple text files.

We identified two problems with current time management systems:

1) The user cannot order them by hand.

In practice tasks are chosen by comparing their importance with other tasks,

so ordering tasks or groups of tasks manually would greatly assist

task management.

2) All tasks as a huge list which quickly becomes overwhelming.

The goal of this project is to develop a new time management system which addresses these problems. In order to address problem 2) we want to have a system with two groups of tasks, one organised in a tree like structure, and one organised as a more traditional list.

Tasks which can be done at any time (so called Someday/Maybe tasks, e.g. solving a computer problem which is not urgent, but would improve productivity) should be organised in a tree like structure, in a similar way we organise our files in directories/subdirectories and folders/subfolders. For instance a small computer problems involving email could be put under the category email system maintenance, which comes under the category computer maintenance. Tasks which need to be done soon should be organised in a more list like structure, and there should be the possibility of manual sorting, addressing problem 1).

We still want to keep features such as automatic sorting (where manual sorting is one of the sorting criteria), and delaying of display of tasks, which have or can be started later. It should as well be easy to convert tasks from the list to the tree like structure and the other way round.

The system can be written in any language, but the resulting system should run under Linux.

**Dr Gary Tam**

**GT-M1 Intuitive 3D Point Cloud Editing of Campus Buildings**

Digitizing our 3D environment is getting easier. You can capture an object (e.g. statue) or a building using a stereo camera, a few high quality cameras or even your smart-phone! This project continues the exciting experience of our "3D Digital Campus" project.

One of the challenges to produce nice 3D digital buildings and realistic virtual walkthrough requires some intelligent editings of the captured 3D point clouds. More often these point clouds contain millions of points. An efficient tool to convert them into sets of polygonal primitives is essential for collision detection and fast rendering.

This project will implement a tool similar to O-snap { <http://osnap.vrvis.at/> }. O-snap automatically optimizes a set of polygons that best fit the captured 3D point clouds. An interface is then provided for intuitive modification. The beautified 3D models, with reduced resolution, facilitate real-time virtual walkthrough.

Our project goal: digitize our whole Swansea campus incrementally, intelligently and with fun!

This project offers you a fantastic opportunity to gain experience on C/C++/Python. 3D geometry analysis is a big topic in CAD, entertainment and game industry. These skills will help your job search in both industry and/or research. Knowledge on C/C++/Python is useful but not essential. Your willingness to learn is utmost important. Interested students are encouraged to discuss with Gary (Rm206A).

**Dr. Xianghua Xie**

is working in the area of Computer Vision, Image Processing, Pattern Recognition, and Medical Imaging. Example projects include machine learning based, automated understanding of human interaction using 3D cameras, and obtaining complex geometrical structures from 3D and 4D medical scans for patient-specific modelling, diagnosis, prognosis, and treatment.  
You may find more details regarding his research from his research website: [http://csvision.swan.ac.uk](https://webmail.swan.ac.uk/owa/redir.aspx?C=3350218506f6489caafbcdf2dcf67171&URL=http%3a%2f%2fcsvision.swan.ac.uk%2f)  
If you are interested in projects in those areas or if you have an idea that require techniques that may fall in those subject areas, please email Dr. Xie: [x.xie@swansea.ac.uk](https://webmail.swan.ac.uk/owa/redir.aspx?C=3350218506f6489caafbcdf2dcf67171&URL=mailto%3ax.xie%40swansea.ac.uk). Good mathematical and programming skills are required. You are strongly encouraged to meet him to discuss ideas before opting him as your potential supervisor.

Intellectual Property Rights

As part of your degree course you will from time to time become involved in projects within the University\* or on placement with outside companies or organisations. These projects are usually regarded as an integral part of your studies and in most instances will form part of your degree syllabus.

The development or writing of computer software, which may be involved in these projects gives rise to the question of ownership of the copyright of software. It is necessary, therefore, that you are informed of University Policy as regards Intellectual Property.

The regulations state that all \Intellectual Property generated by the staff of the University in the course of their duties to and employment with the University belongs to the University". Students are treated in this respect in the same way as staff. Thus, Intellectual Property belongs to the University in the first instance.

However, if you are involved in a project, which is based or partly based with an outside sponsor then the outside organisation will enjoy rights associated with their work which you are doing. In most instances they will own any Intellectual Property generated by the project.

In cases of doubt or uncertainty, please check with your supervisor who will

guide you or seek advice from the Head of Department or Business Services

Manager of the University.

\* *“University” for the purposes of this document is to be read as “Swansea*

*University”*.

Industrial Projects

The projects listed here will be run in cooperation with the Software Alliance Wales (SAW), see http://www.softwarealliancewales.com.

SAW will protect the cooperation with the industrial companies by having a

STUDENT DEVELOPMENT PROJECT AGREEMENT : signed by both parties. There is also support available in setting up meetings.

Here the list of currently avaible IR projects (there might be a supplement at the project selection fair after Easter):

Student Project Proposals

Students that have a particular interest that they think will make a good

4th year project may propose that project. The project may have a basis within a summer placement, personal interest or a commercial use. Each proposal must contain:

\_ A project title

\_ A brief description (about 300 words)

\_ Specific hardware and software requirements if any

\_ The main features of the project, such as links with industry, the reason for personal curiosity, or the target market. Please pay particular attention to the differences between a level M and level 3 projects explained at the beginning of the brochure.

This proposal should be shown to members of staff who you think may be interested in supervising such a project. You should obtain the signature of any member of staff who is interested on the appropriate part of the project selection form. In the absence of any staff signatures, the project will not be considered. Students should bear in mind that suggested projects offer students a very wide scope, and most projects can be tailored to student interest.

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Student's Own Project

Student Number.................................

Surname.........................................

First Name......................................

Title...........................................

Supervisor's Signature..........................

Student's Signature.............................

Write a description of your project (about 300 words) below:

Project Selection Form

Student Number..................................

Surname.........................................

First Name......................................

Student's Signature.............................

1st choice

2nd choice

3rd choice

4th choice

5th choice