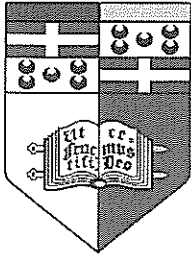


Faculty of ICT

B.Sc. I.T. (Hons.) in Computing and Business
ICT3905 (Final Year Project in Computing and Business)

Proposal Form for Lecturers

Title/Area:	Area 1: Human Factors in Software Engineering Area 2: On-boarding in public facing e-government services
Project Supervisor:	Chris Porter
Project Co-supervisor: <i>(if applicable)</i>	NA
Main Subject Area/s: <i>(keywords/tags: not more than 5)</i>	HCI, Human Factors, E-government, Behavioral Modeling
Brief Project Description inc. References: <i>(word limit approx. 300 words)</i>	Investigating and modelling user behavior and perceptions towards online services (public or private sector), with particular emphasis on: <ul style="list-style-type: none"> - Registration processes - Privacy issues - Accessibility issues - Pricing issues
Resources Required: <i>(if student needs to buy them)</i>	NA
Recommended Prerequisites / Knowledge Required and Supporting 3rd Year Study-units:	NA
Foreseeable Ethical Issues and How these will be tackled: <i>(if applicable)</i>	NA

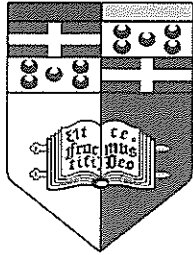


Faculty of ICT

B.Sc. I.T. (Hons.) in Computing and Business
ICT3905 (Final Year Project in Computing and Business)

Proposal Form for Lecturers

<p>Title/Area:</p>	<p>Area 1: Enterprise Systems Area 2: e-Government Area 3: Computer Aided Design Area 4: Business Intelligence Area 5: Mobile apps related to voice recognition</p>
<p>Project Supervisor:</p>	<p>Peter Xuereb</p>
<p>Project Co-supervisor: (if applicable)</p>	<p>Depending on areas/titles: Lalit Garg, Joseph Bonello</p>
<p>Main Subject Area/s: (keywords/tags: not more than 5)</p>	<p>ERP, SCM, PLM, CAD, BI</p>
<p>Brief Project Description inc. References: (word limit approx. 300 words)</p>	<p>Possible areas of work: ERP: Order taking over mobile with a focus on improving cross-selling and upselling BI: Calendar views of work absences for better HR planning Mobile: voice driven mobile interface for use in cars</p>
<p>Resources Required: (if student needs to buy them)</p>	<p>Any required licences will be sought through industry partners.</p>
<p>Recommended Prerequisites / Knowledge Required and Supporting 3rd Year Study-units:</p>	<p>None</p>
<p>Foreseeable Ethical Issues and How these will be tackled: (if applicable)</p>	<p>None</p>



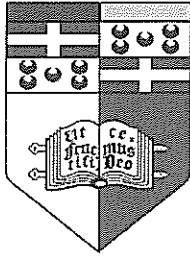
Faculty of ICT

**B.Sc. I.T. (Hons.) in Computing and Business
ICT3905 (Final Year Project in Computing and
Business)**

Proposal Form for Lecturers

Title/Area:	Digital footprint analytics for prediction, detection and management of neurological disorders
Project Supervisor:	Dr Lalit Garg
Project Co-supervisor: (if applicable)	
Main Subject Area/s: (keywords/tags: not more than 5)	<p>It is an application of AI techniques (especially machine learning) to social media data analytics.</p> <p>Machine learning, digital footprints, data analytics, social media analytics, behavioral health, mental health, neurological disorders, sentiment analysis, opinion mining, natural language processing</p>
Brief Project Description inc. References: (word limit approx. 300 words)	<p>A large population is affected by neurological disorders such as depression, epilepsy, stroke, parkinson and other mental health issues. Early detection might help in better treatment of these psychiatric symptoms. As we are getting more and more active online. The data generated through one's online activities (called digital footprint) might provide some clue about his/her mental health status. In this project we will investigate if we can use digital footprint to assess one's mental health status and to timely predict, detect and manage his/her psychiatric symptoms.</p> <ol style="list-style-type: none"> 1. Libert, T., Grande, D. and Asch, D.A., 2015. What web browsing reveals about your health. <i>BMJ</i>, 351, p.h5974. 2. Bechmann, A. and Vahlstrup, P.B., 2015. Studying Facebook and Instagram data: The Digital Footprints software. <i>First Monday</i>, 20(12). 3. Oatley, G., Crick, T. and Mostafa, M., 2015. Digital Footprints: Envisaging and Analysing Online Behaviour. In <i>Proceedings of 2015 Symposium on Social Aspects of Cognition and Computing Symposium (SSA/SC 2015)</i>. 4. Youyou, W., Kosinski, M. and Stillwell, D., 2015. Computer-based personality judgments are more accurate than those made by humans. <i>Proceedings of the National Academy of Sciences</i>, 112(4), pp.1036-1040. 5. Asch, D.A., Rader, D.J. and Merchant, R.M., 2015. Mining the social mediome. <i>Trends in molecular medicine</i>, 21(9), pp.528-529. 6. Feher, K., 2016. Digital identity: The transparency of the self. <i>Applied Psychology</i>, 10, p.9789814723398_0007. 7. Zhang, D., Guo, B., Li, B. and Yu, Z., 2010. Extracting social and community intelligence from digital footprints: an emerging research area. In <i>Ubiquitous Intelligence and Computing</i> (pp. 4-18). Springer Berlin Heidelberg. 8. Gencoglu, O., Simila, H., Honko, H. and Isomursu, M., 2015, August. Collecting a citizen's digital footprint for health data mining. In <i>Engineering in Medicine and Biology Society (EMBC), 2015 37th Annual International Conference of the IEEE</i> (pp. 7626-7629). IEEE.

	<p>9. Mulder, D. J. (2015). Social Media: Digital Footprints and Digital Wisdom. Faculty Work: Comprehensive List. Paper 424.</p> <p>10. Marchal, A., Lejeune, P. and Nico, D.B., 2015. Blueprints for unique footprints: sex, age and individual identification from digital 3D models of lion (Panthera leo) paws. 13th Savanna Science Network Meeting, Skukuza, 9-12 March 2015.</p>										
<p>Resources Required: <i>(if student needs to buy them)</i></p>	<p>Internet Access, Matlab, MS-Visual Studio, Library access, Access to high quality literature resources, tools for sentiments analysis, natural language processing tools, access to digital footprints of participants.</p>										
<p>Recommended Prerequisites / Knowledge Required and Supporting 3rd Year Study-units:</p>	<p>Knowledge of basic AI methods, good programming skills in a language of your choice, strong analytical and problem solving skills, fast learning abilities, reliable, responsible, hardworking, enthusiasm and determination to learn and acquire new skills.</p> <p>B.Sc. IT (Hons)- Artificial Intelligence study units:</p> <table border="0"> <tr> <td>ICS3204</td> <td>Advanced Web Intelligence</td> </tr> <tr> <td>ICS3201</td> <td>Knowledge Discovery and Management</td> </tr> <tr> <td>CSA3220</td> <td>Machine Learning, Expert Systems and Fuzzy Logic</td> </tr> <tr> <td>LIN3011</td> <td>Data Driven Natural Language Processing</td> </tr> <tr> <td>CSA3216</td> <td>Search Engine Technology (Preferred)</td> </tr> </table>	ICS3204	Advanced Web Intelligence	ICS3201	Knowledge Discovery and Management	CSA3220	Machine Learning, Expert Systems and Fuzzy Logic	LIN3011	Data Driven Natural Language Processing	CSA3216	Search Engine Technology (Preferred)
ICS3204	Advanced Web Intelligence										
ICS3201	Knowledge Discovery and Management										
CSA3220	Machine Learning, Expert Systems and Fuzzy Logic										
LIN3011	Data Driven Natural Language Processing										
CSA3216	Search Engine Technology (Preferred)										
<p>Foreseeable Ethical Issues and How these will be tackled: <i>(if applicable)</i></p>	<p>Students would analyse the health status and social media data of users. This might raise privacy issues. A written consent will be obtained from participants before the start of the project. Also, a prior approval will be obtained from the University Research Ethics Committee.</p>										



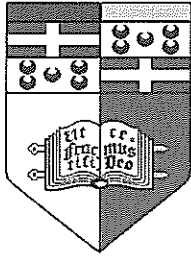
Faculty of ICT

**B.Sc. I.T. (Hons.) in Computing and Business
ICT3905 (Final Year Project in Computing and
Business)**

Proposal Form for Lecturers

<p>Title/Area:</p>	<p>Hospital admission pattern analysis, bed resource requirements forecasting, allocation and management</p>
<p>Project Supervisor:</p>	<p>Dr Lalit Garg</p>
<p>Project Co-supervisor: (if applicable)</p>	
<p>Main Subject Area/s: (keywords/tags: not more than 5)</p>	<p>The project would develop novel applications of AI/ML methods in the healthcare management problems such as hospital admission pattern analysis, bed resource requirements forecasting, allocation and management. It would provide students an excellent opportunity to understand how AI/ ML methods can be used for developing solutions to real life problems and also assessing effectiveness of such AI/ML tools.</p>
<p>Brief Project Description inc. References: (word limit approx. 300 words)</p>	<p>Healthcare resource planners need to develop policies that ensure optimal allocation of scarce healthcare resources. This goal can be achieved by analysing admission patterns to forecast daily resource requirements to ensure optimum allocation and management of available resources. If resources are limited, admission should be scheduled according to the resource availability. Such resource availability or demand can change with time. We here model admissions and patient flow through the care system as a discrete time Markov chain. In order to have a more realistic representation, a non-homogeneous model is developed which incorporates time-dependent covariates, namely a patient's present age and the present calendar year. However, more sophisticated models are required to better manage changes in admission patterns and resource requirements. As our previous work, we have already developed many such sophisticated models for better modelling admission patterns and resource requirements [1-4]. In this final year project (FYP), we will extend our work to develop novel approaches to effectively solve the problem using AI/ML based methods.</p> <ol style="list-style-type: none"> 1. Garg L, McClean SI, Meenan BJ, Millard PH (2010). A non-homogeneous discrete time Markov model for admission scheduling and resource planning in a care system. Health Care Management Science. 13(2):155–169. 2. Garg L, McClean SI, Meenan BJ, Millard PH (2009). Non-homogeneous Markov Models for Sequential Pattern Mining of

	<p>Healthcare Data. IMA Journal Management Mathematics. 20(4): 327-344.</p> <p>3. Garg L, McClean SI, Meenan BJ, Barton M, Fullerton K (2012). Intelligent patient management and resource planning for complex, heterogeneous and stochastic healthcare systems. In press. IEEE Transactions on Systems, Man, and Cybernetics--Part A: Systems and Humans.</p> <p>4. Garg L, McClean SI, Meenan BJ, Barton M, Fullerton K (2013). An Extended Mixture Distribution Survival Tree for Patient Pathway Prognostication. Communications in Statistics: Theory and Methodology. 42(16):2912-2934.</p>								
<p>Resources Required: <i>(if student needs to buy them)</i></p>	<p>A computing device (PC or Laptop), Internet Access, Matlab, C/C++, UM Library access, Access to high quality literature resources.</p>								
<p>Recommended Prerequisites / Knowledge Required and Supporting 3rd Year Study-units:</p>	<p>Knowledge of basic AI methods, good programming skills in a language of your choice, strong analytical and problem solving skills, fast learning abilities, reliable, responsible, hardworking, enthusiasm and determination to learn and acquire new skills.</p> <p>B.Sc. IT (Hons)- Artificial Intelligence study units:</p> <table border="0"> <tr> <td>ICS3201</td> <td>Knowledge Discovery and Management</td> </tr> <tr> <td>CCE2501</td> <td>Modelling and Computer Simulation</td> </tr> <tr> <td>CSA3220</td> <td>Machine Learning, Expert Systems and Fuzzy Logic</td> </tr> <tr> <td>CSA3219</td> <td>Computability and Complexity</td> </tr> </table> <p>(Preferable)</p>	ICS3201	Knowledge Discovery and Management	CCE2501	Modelling and Computer Simulation	CSA3220	Machine Learning, Expert Systems and Fuzzy Logic	CSA3219	Computability and Complexity
ICS3201	Knowledge Discovery and Management								
CCE2501	Modelling and Computer Simulation								
CSA3220	Machine Learning, Expert Systems and Fuzzy Logic								
CSA3219	Computability and Complexity								
<p>Foreseeable Ethical Issues and How these will be tackled: <i>(if applicable)</i></p>	<p>We have already got ethical approval for the project. Students would also require to apply for an ethical approval to the University's research ethics committee.</p>								



Faculty of ICT

B.Sc. I.T. (Hons.) in Computing and Business
ICT3905 (Final Year Project in Computing and Business)

Proposal Form for Lecturers

Title/Area:	Implementing an E-Health Monitoring and Support System
Project Supervisor:	Anthony Spiteri Staines
Project Co-supervisor: <i>(if applicable)</i>	
Main Subject Area/s: <i>(keywords/tags: not more than 5)</i>	Software Engineering, programming, system integration, mobile computing
Brief Project Description inc. References: <i>(word limit approx. 300 words)</i>	<p>In the modern world new services are the order of the day. An integrated holistic medical information system that can be used for supporting patients and providing them with information and reminding them of their appointments can be of benefit in this area. The system can also send information via sms to mobile phones. The task of the student is to find similar systems compare their advantages and shortcomings and come up with a proposed improved system that has to be implemented along with improved features and new technologies.</p>
Resources Required: <i>(if student needs to buy them)</i>	
Recommended Prerequisites / Knowledge Required and Supporting 3rd Year Study-units:	Knowledge of Soft Real Time systems, programming using different languages, systems analysis and design, testing, web programming etc.
Foreseeable Ethical Issues and How these will be tackled: <i>(if applicable)</i>	The student is advised to apply for clearance Research and Ethics Committee for clearance if he/she wishes to use individual data will be used. However it is still possible to create and devise a fully functional solution using fictitious or program generated data.