

Department	SCEBE
Supervisors	Dr Simon Wells
Project Title	Using Formal Dialogue Modules to Guide & Evaluate Conversational AI
<p>PROJECT DESCRIPTION</p> <p>Formal dialogue models have been developed over the last several decades to shed light on the conversational practises of people in a wide range of communicative contexts. More recently conversational AI has made rapid progress in generating plausible content for human-machine dialogue. Generally, formal approaches to dialogue can be less flexible than ML based-approaches, however, ML-based approaches can easily go <i>off piste</i> and diverge from human expectations. The goal of this project is to bring together the advantages of each approach, by using formal models of various types of dialogue to plan, guide, manage, and self-evaluate utterances emitted from the conversational AI.</p> <p>This project will involve a detailed study of both existing formal dialogue systems as well as state of the art conversational AI. The novel contribution will be a theoretical and applied model that brings together useful elements of formal and ML based approaches to conversational AI.</p> <p>Prospective applicants are encouraged to contact the Supervisor before submitting their applications. Applications should make it clear the project you are applying for and the name of the supervisor(s).</p> <p>Academic qualifications</p> <p>A first degree (at least a 2.1) ideally in Computer Science or Machine Learning. with a good fundamental knowledge of either Argumentation Theory or Machine Learning.</p> <p>English language requirement</p> <p>IELTS score must be at least 6.5 (with not less than 6.0 in each of the four components). Other, equivalent qualifications will be accepted. Full details of the University's policy are available online.</p> <p>Essential attributes:</p> <ul style="list-style-type: none"> • Experience of fundamental Machine Learning techniques • Competence in ML toolkits, e.g. Scikit-learn, Tensorflow, PyTorch, etc. • Knowledge of Argumentation Theory • Good written and oral communication skills • Strong motivation, with evidence of independent research skills relevant to the project • Good time management <p>Desirable attributes:</p> <p>Understanding of topics in machine learning, computational argumentation, and dialogue modellign would be advantageous.</p>	
Indicative Bibliography	<p>Wells (2012) "A Domain Specific Language for Describing Diverse Systems of Dialogue"</p> <p>Bishop (2007) "Pattern Recognition and Machine Learning"</p> <p>Goodfellow & Bengio (2017) "Deep Learning"</p> <p>Murphy (2012) "Machine Learning"</p>

Enquiries	For informal enquiries about this PhD project, please contact s.wells@napier.ac.uk
Web page	https://www.napier.ac.uk/research-and-innovation/research-degrees/application-process
