

<b>Department</b>	
<b>Supervisors</b>	Dr Yanchao Yu
<b>Funding Status</b>	
<b>Project Title</b>	AI-driven Conversational Storytelling with Humans in Natural Language

## PROJECT DESCRIPTION

Human society and entertainment depend heavily on storytelling. Many of the most popular forms of storytelling in history, such as books, theatre, television and film, involve passive viewer experiences. Storytelling is no longer the purpose of social interaction but a means to improve human understanding of the unfamiliar. Interactivity is an essential part of the school and entertainment experience, but at the same time, interactivity and storytelling often need to be more consistent. Too much interaction will affect the story's integrity, but too long narration makes the audience unable to understand and gradually lose interest. Therefore, narrative interaction has always been an essential issue in robot or virtual reality interaction, in order to strike a balance between human-machine interaction and engaging narrative, a lot of design and training work needs to be spent.

In this PhD program, the successful candidate will explore the current state of the art in conversational storytelling, robotics and machine/deep learning, and then develop a new framework/model to support active learning capabilities to tell and interpret facts from different modes (e.g. text-based data, images, video and physical presentations). The successful candidate will also have the opportunity to explore the impact of multi-character dialogue on the reader. This approach will provide a key solution to one of the biggest concerns of today's conversational AI and multi-modal interactions.

Applications from potential part-time students are also welcomed.

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 supervisors.

### Academic qualifications

A first degree (at least a 2.1) ideally in Computer Science with a good fundamental knowledge of software engineering, artificial intelligence, natural language processing, or multi-agent learning.

### English language requirement

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.

### Essential attributes:

- Experience in fundamental software design and development
- Competent in Multi-agent Learning or Machine Learning
- Knowledge of Natural language processing or Conversational AI
- Good written and oral communication skills
- Strong motivation, with evidence of independent research skills relevant to the project
- Good time management

### Desirable attributes:

- Programming experience in Python and Machine Learning frameworks (e.g. TensorFlow or Keras)
- Good knowledge of Conversational AI or Robotics

<b>Indicative Bibliography</b>	<ul style="list-style-type: none"> <li>• Fu, T., Gao, S., Zhao, X., Wen, J. R., &amp; Yan, R. (2022). Learning towards conversational ai: A survey. <i>AI Open</i>, 3, 14-28.</li> <li>• Papangelis, A., Wang, Y. C., Molino, P., &amp; Tur, G. (2019). Collaborative multi-agent dialogue model training via reinforcement learning. <i>arXiv preprint arXiv:1907.05507</i>.</li> <li>• Wong, C. J., Tay, Y. L., Wang, R., &amp; Wu, Y. (2016, March). Human-robot partnership: A study on collaborative storytelling. In <i>2016 11th ACM/IEEE International Conference on Human-Robot Interaction (HRI)</i> (pp. 535-536). IEEE.</li> <li>• Chubb, J., Missaoui, S., Concannon, S., Maloney, L., &amp; Walker, J. A. (2022). Interactive storytelling for children: A case study of design and development considerations for ethical conversational AI. <i>International Journal of Child-Computer Interaction</i>, 32, 100403.</li> <li>• Huang, T. H., Ferraro, F., Mostafazadeh, N., Misra, I., Agrawal, A., Devlin, J., ... &amp; Mitchell, M. (2016, June). Visual storytelling. In <i>Proceedings of the 2016 conference of the North American chapter of the association for computational linguistics: Human language technologies</i> (pp. 1233-1239).</li> </ul>
<b>Enquiries</b>	For informal enquiries about this PhD project, please contact y.yu@napier.ac.uk
<b>Web page</b>	<a href="https://www.napier.ac.uk/research-and-innovation/research-degrees/application-process">https://www.napier.ac.uk/research-and-innovation/research-degrees/application-process</a>