Multi-agent deep reinforcement learning

PhD

Funding: £16,000 for 3 years
Supervisor: Professor Giovanni Montana and Dr Kurt Debattista
Start Date: As soon as possible

Project overview

This is an exciting opportunity to work as part of our new Data Science group at WMG, University of Warwick, for the duration of your PhD.

In the recent years, Reinforcement Learning (RL) has been applied to a wide range of challenging problems in different fields, such as game playing, robotics, healthcare, finance and manufacturing. So far, RL has solved challenges which have never been solved before in several domains.

One of the most important breakthroughs has been the AlphaGo [1], which defeated the world’s champion of GO, for the first time in history. In a recent industrial application it has been used for the cooling of large scale systems of a Data Science Centre [2]. Despite the great growth of RL in the last decade, most of its successes have been in single agent domains, where behaviour of other agents is not so relevant. There are lots of application areas where the interaction between multiple agents, which can cooperate or compete, is critical. Some of the related problems are the multi-robot control and communication, multiplayer games, the analysis of social dilemmas. When applied to the multi-agent domains, traditional RL approaches suffers from several problems (e.g. non stationarity environments) [3]. It seems very important to develop new methods for scaling the RL to those environments and for creating artificial intelligences which are able to interact with both each other and humans.

In this project we will develop novel methods for deep multi-agent reinforcement learning in the context of manufacturing applications such as robotics and computer vision.

Qualifications:
Candidates should have an MSc in Statistics, Computer Science or similar (e.g. Engineering) and programming skills.

Funding:
Due to funding regulations this project is open to UK/EU students only.

This position provides a tax free stipend for 3 years of £16,000.

To apply
If you would like to be considered for this position or have any questions please complete our online enquiry form.