

Agent-based Modelling

HPC-Competence Center

High Performance Computing (HPC) Wales is Wales' national super-computing service provider. Host to the UK's largest national distributed supercomputing network, HPCWales provides businesses and researchers with local access to world-class technology and the support to fully exploit it.



Enterprise

Chris Headleand, Creative Director of Ogwen Publishing, is currently undertaking his PhD research in Artificial Intelligence with a focus on virtual humans and recreating social phenomenon. As a digital media solutions company based in North Wales, Ogwen specialises in online digital media and has been exploring the mobile games market for a number of years. This project provided the perfect opportunity to bring together academic research with a company seeking to take realistic animation in films and games to the next level.

How HPC makes the difference

Current systems within the mobile games market use a finite-state based decision making system. Chris' PhD research has proposed a shift towards agents that are able to learn from the environment they are in, resulting in visibly more believable decisions and improved animation quality. This kind of work, however, requires significant computation - making this type of animation impossible on current desktop machines.

For the real-time animation of virtual humans, Chris proposed to utilise HPC for the optimisation stage prior to the real-time animation stage. This allowed testing of different evolved animations and thousands of physics simulations to be run in parallel. The project also explored the use of massively parallel algorithms to produce controllers for data-driven animations.

Currently at write-up stage, the project has helped to

develop algorithms which are expected to take the realistic animation in films and games to the next level, ultimately helping Ogwen Publishing to develop a niche in the mobile games market.



Fig: Chris Headleand, Creative Director of Ogwen Publishing and PhD student at Bangor University

