Project Title: Using Serious Gaming and Intelligence Adaption to Improve Learning Engagement for Children with Learning Difficulties on the Autism Spectrum

Supervisors: Dr Nigel McKelvey, Karen Bailey

Keywords: Autism Spectrum Disorders (ASD), Computer Science Education, Gaming, Learning Games

Project Summary:

Autism Spectrum Disorders (ASD) are a group of developmental neuropsychiatric disorders. They are referred to as a spectrum because the characteristics and symptoms can present in different ways and can appear at different levels of intensity for each individual. Learning through play is now an accepted concept. Research has shown that children with ASD are naturally visual learners.

When presented to children with autism, games may not always make sense to them. The child might even dislike the game, because of a certain sound, colour or object in the game. In this situation, many people would assume that the child is unable to understand the requirements of the interactive system. However, from the experiences of people with autism and long-time teachers of autistic children, it has become clear that the behaviour as well as the learning problems of such a child can be overcome with a little bit of experimentation and playing around with different strategies. More intervention techniques are encouraging autistic children to explore learning in their own ways.

This study aims to investigate various considerations which should be taken into account when designing these learning games. This includes limited language skills, special interests, ability to think visually rather than in words and colour perception. This research can then be used to build a model of interaction types, which can then be modified to suit the preferences of the learner. The mechanism can be enhanced by monitoring the learners engagement and progress and adapting the system intelligently to improve the learners engagement with the game for example reverting to simpler tasks if the level becomes too difficult or modifying the interface style and the rewards system.

Candidate Qualifications/Requirements:

A first or second-class upper division undergraduate degree in a relevant computing discipline.