



BU PhD Studentships 2007

Modelling and Animation using Implicit Complexes

Background to Research

Summary of Research Project:

This project involves the research, design and development of a generic Computer Animation production system prototype which will drastically simplify the way computer animators think about, design and produce computer animation sequences involving the interaction of ethereal, soft and hard objects. The project involves the research and development of many new mathematical techniques and algorithms, and the development of novel software tools. To undertake this project we require five Research Students for a period of at least 36 months. The project involves the development of a prototype for a next-generation computer animation system that can be used by both artists and scientists in the production of animation sequences depicting complex forms and natural phenomena that are difficult or impossible to generate with currently available tools.

Background and Rationale:

This project will culminate in the development of a prototype computer animation system, which upon completion will be released with an open-source licence and is intended to be used and further developed by academia and industry alike.

This project is likely to maintain and further enhance the reputation of the NCCA as the leading national research centre in computer animation. Such a project will also have beneficial effects on the NCCA teaching programmes, as it will allow us to involve our undergraduate and postgraduate students in the implementation and testing of a novel animation system. This is important, as 60% of our graduates obtain employment in the Computer Animation and Digital Special Effects production industry.

Developing a full-blown ready-for-production animation system is a very time consuming task involving hundreds of man-years and is beyond the scope of this project. We intend to develop a next-generation proof-of-concept entry-level system that can be tailored, augmented and improved by its intended user community. Even this modest undertaking would be impractical for most research teams, given the number of unanswered research questions and the amount of new technology that needs to be developed. Our team, however, has a distinct advantage. Prof. Comninos, with over twenty years R&D experience in animation systems, has developed the CGAL animation system that was used to produce numerous prize-winning animations. Prof. Alexander Pasko and Dr. Valery Adzhiev are noted functional representation experts and have developed the HyperFun modelling language and tools, which are well known in the Computer Graphics community. Collectively our team has extensive experience in the creation of boundary and functional representation geometric modellers and renderers. Although such a project appears ambitious, it is perfectly within our capabilities.

Outstanding Applicants

We are looking for outstanding applicants who will preferably have a good first degree (first or upper-second class) and/or a Masters degree in Computer Science or Mathematics. An IELTS (Academic) score of 6.5 minimum is essential for candidates for whom English is not their first language.

Supervisory Team & Research Environment

Prof. Peter Comninou, Prof. Alexander Pasko and Dr. Valery Adzhiev.

Informal Enquiries

For informal enquiries please contact Prof. Peter Comninou at peterc@bournemouth.ac.uk

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