

## COURSES

## RESEARCH, TRAINING AND EDUCATION

Our regular look at the goings-on in games academia, developer training and the growing relationship between interactivity and education...

# Electronic partnership advances game Arts

**University College London** and **EA UK** have kicked off a joint research initiative that sees academia and industry collaborating to figure out ways of increasing the number of on-screen characters in a game without compromising visual quality.

The research and funding for these new visualisation techniques comes via EA CTO Ian Shaw and UCL's senior computer graphics lecturer Anthony Steed who both want to help games raise the visual bar. As part of the partnership Simon Pilgrim, a student on the university's engineering doctorate in Virtual Environments, Imaging and Visualisation (VEIV EngD), is working on the research from EA's offices.

Specifically, Pilgrim is working on working character skinning, which will, of course, help improve how characters appear dependent on how many of them occur on-screen at any one time, without harming gameplay speeds. His techniques were presented at this year's SIGGRAPH - more details can be found at <http://www.cs.ucl.ac.uk/staff/S.Pilgrim/papers/>.



■ Simon Pilgrim's character-skinning tech in action

EA's Shaw commented: "EA has had a working relationship with UCL for the last six years and the university's academic research correlates with our development of computer games. As an organisation, we wanted to form a closer relationship between the theoretical knowledge and practical application for developing computer game animation.

"Our partnership with UCL is proving extremely beneficial and enabling us to find ways that academia and industry can work together to help keep us at the forefront of animation technology."

Added UCL's Steed: "It's fantastic to see the direct impact UCL's work is having in a growing commercial market. Both EA and UCL continue to learn how academia and industry can produce market leading results together."

He has been working almost exclusively at EA, the structure of the course allowing him to conduct his work away from the college. And having a researcher in-house has helped benefit the developers, too, with EA saying production on some titles has already advanced due to Pilgrim's input and research.

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## TECH SPECS: CHARACTER SKINNING

- Investigates the possibilities of level of detail systems based upon the complexities of the skeletal animation of a video game character, as well as the character's geometry and textures - reducing computation and data overheads.
- Blends progressive bones and permits a low-cost continuous level of detail system, avoiding 'popping' effects.
- Prioritises the animation of each skinning 'bone' according to its importance and animates those bones which are necessary and will not waste computer time.
- Uses existing CPU and GPU pipelines with little to no modification, whilst optimising at runtime for multiple CPU and GPU bottlenecks.
- Uses a 'progressive' skeletal hierarchy per animation to continually improve the quality of movement.
- Especially useful for animation of large crowds and background characters, as well as costly fine-detail secondary animations such as faces, muscle modelling, etc.