The 2009 AMD Graphics Game Computing Applications Group Internship Program

AMD is the customer-centric innovation company, a processing powerhouse that offers smarter choices for its customers and makes technology more accessible to the world. AMD’s Graphics Product Group recognizes that today’s research is next year’s commercial or entertainment application, and young researchers are likely to come up with new and exciting ideas. AMD is driven to contribute research and technology efforts that will lead to the next generation of computer graphics applications.

Following the success of previous years’ internship program, AMD’s Game Computing Applications Group is accepting applications for internship positions at the Marlborough, MA and Sunnyvale, CA locations for the summer of 2009. The interns will work on GPU- or parallel computing-related projects. The interns will be working alongside experienced engineers and researchers, and will be provided a great deal of guidance and mentorship, along with invaluable practical production experience. We are entering a very exciting time in our industry, new APIs such as Direct3D® 11 and OpenCL will enable new flexibilities and opportunities in graphics and GPU computing research. This is an excellent opportunity for a student to gain exposure to the graphics industry, to work with a talented team of individuals to produce a high caliber of work, and to develop the skills needed to succeed in the technology industry.

Each intern is expected to concentrate on one main project, and possibly participate on other projects depending on availability and interest. The following (not-exhaustive) list of projects undertaken by previous years’ interns and group members gives a good indication of the type of project that should be expected:

- Design and implementation of a new technique for rendering Depth of Field camera lens effects (Work was presented as a poster at the Symposium on Interactive 3D Graphics and Games 2009)
- Implementation of novel real-time global illumination approximations and deferred shading techniques utilizing new Direct3D10.1® API features
- Implementation of interactive direct volume rendering application with intuitive transfer function editor for specifying material properties for advanced medical visualization (Work was published in the Journal of Parallel and Distributed Computing)
- Design and implementation of a high-quality isosurface extraction algorithm in real-time on the GPU using novel Direct3D10® graphics pipeline (Work work was published in the Journal of Parallel and Distributed Computing and as an AMD technical report)
- Design and implementation of an algorithm for real-time mesh simplification on the GPU with simultaneous construction of multiple LODs using novel Direct3D10® graphics pipeline (Work was published in ACM SIGGRAPH Symposium on Interactive 3D Graphics and Games 2007)
- Design and implementation of GPU-based particle systems in a cross-platform, cross-API rendering engine
- Design and implementation of new rendering techniques that make use of Direct3D10® geometry shaders
• Design and implementation of a performance analysis tool for processing and displaying pixel shader performance

• Design and implementation of an algorithm and tool for triangle order optimization (Work published in ACM SIGGRAPH Symposium on Interactive 3D Graphics and Games 2006)

• Design and implementation of a novel generic optimization technique for efficient pixel shader processing

---

**Eligibility**

Applicants must currently be full-time students working towards an MS or PhD in Computer Science, Electrical Engineering, Computer Engineering or a related field. Experience in computer graphics fundamentals and latest algorithms, GPU pipelines and general purpose highly parallel programming is a strong plus.

---

**Application**

To apply, send the following to GCA_group_intern@amd.com:

• The name and contact information of the applicant’s advisor; a recommendation is helpful though not required
• The start and end dates the applicant would like to work: a 12 week consecutive period from May to September 2009. University co-op programs and other time frames can also be considered based on the strength of the applicant
• Resume/CV (PDF format)
• One page describing why the applicant would like to work with the AMD Game Computing Applications Group and what they would like to accomplish during their internship
• Home page URL containing list of previous projects, if available, is very beneficial

Applications must be received no later than April 15, 2009 but early submissions are strongly encouraged.

---

**Compensation**

Interns will be competitively compensated like full-time employees with similar qualifications, performing the same tasks.

---

**Decision Process**

Phone interviews for finalists will be conducted starting early April. The hiring decision will be made by late April. If the candidates have additional time constraints due to alternative internship applications / existing offers, please kindly include this information in the purpose letter.