Bryan Klingner

bryan@overt.org
512.650.8498
5348 Lawton Ave, Oakland, California 94618

Education

University of California, Berkeley
Ph.D., Computer Science, November 2008.
Master of Science, Computer Science, May 2006.

University of Texas, Austin
Bachelor of Science, Computer Engineering, May 2003.
Bachelor of Arts, Plan II Liberal Arts Honors, May 2003.

Experience

earthmine *Research Scientist*
Berkeley, California November 2008–April 2010
Designed an automated algorithm to generate compact 3D representations of street scenes from stereo data. Developed computer vision algorithms to automatically detect and geo-locate arbitrary objects in high-resolution street imagery. Created a data platform for augmented reality applications.

Pixelux Entertainment *Senior Research Consultant*
San Francisco, California December 2007–Present
Assisted in the development of a video-game physics engine (DMM), used to create fracture effects for video games like *Star Wars: The Force Unleashed* and movies like *Avatar*.

Apple *New Products Engineer*
Cupertino, California October 2003–July 2004
Helped create the iMac G5, PowerMac G5, and XServe G5. Saved hundreds of man-hours by automating board bring-up and parameter tuning using a combination of custom hardware and Python. Worked across many different groups to bring the tools to bear and accelerate product shipment.

Microsoft *Program Manager Intern*
Redmond, Washington May 2000–August 2000
Developed networking features for what would become Windows XP and Vista. Delivered a network stack for MSN that would run properly across six different versions of Windows.

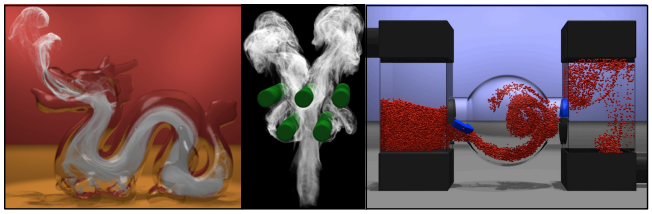
Awards

National Science Foundation
Graduate Research Fellowship. Selected for my doctoral research at Berkeley on computational geometry, meshing, and physically-based simulation.

ACM SIGGRAPH
Animation Festival Selection, 2006. Created an original short film featuring results from our paper *Fluid Animation with Dynamic Meshes*.

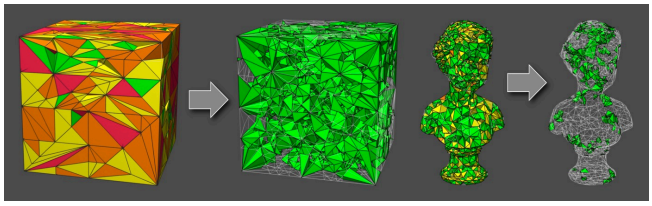
University of California, Berkeley
Graduate Fellowship. Selected for outstanding scholarship from among all new EECS graduate students.

Research



Graphical Simulation for Film. I helped pioneer the use of tetrahedral meshes for fluid and solid simulation in effects for film. Tetrahedral meshes conform well to complex simulation domains while using many fewer elements than traditional cubical grids.

Along with collaborators at Berkeley, I demonstrated the practical use of tetrahedral meshes for simulating fluid coupled with deforming solids and elasto-plastic solids. My simulation work has been published in the proceedings of *SIGGRAPH* and the *Symposium on Computer Animation*.



Meshing. I performed groundbreaking research in the field of tetrahedral mesh improvement, setting a new benchmark for mesh quality. My mesh improvment techniques drastically improve the quality of the worst elements of tetrahedral meshes, making them much better suited for simulation and interpolation.

I developed Stellar, an open-source software package for tetrahedral mesh improvement. My mesh improvement work has been published in the proceedings of *SIGGRAPH* and *The International Meshing Roundtable*.

Expertise

Software development / leadership: Architecture and system design, Rich UI / SDK Development, iPhone, iPad, Flash client deployment, Linux web stacks (LAMP, Django, Rails), Python, MATLAB, C/C++.
Cloud computing: design of horizontally-scaled compute and service clusters, cloud storage, expert in Amazon Web Services APIs.
Computational Geometry: triangle and tetrahedral meshes, Delaunay meshing, numerical optimization.
Graphical simulation: Lagrangian and Eulerian fluid simulation, visco-plastic and elasto-plastic solids, surface extraction, fluid and free surface rendering.
3D Reconstruction: point cloud manipulation, robust shape estimation, model fitting and simplification, mesh extraction.
Image processing: gradient and frequency domain analysis, content-adaptive image enhancement.
Computer vision: segmentation, range image analysis, object detection.