

# Young (Youngung) Shon

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OBJECTIVE     A software engineering position

EDUCATION    ◇ **University of California at Berkeley**, Berkeley, CA  
M.S. and Ph.D. in Mechanical Engineering with Computer Science Minor, Fall 2006  
Ph.D. research: *Development and Evaluation of a Haptic Rendering System for Virtual Design Environments*.  
M.S. project: *The Role of Haptic Interfaces and Visual Aids in Drawing in Virtual Reality Environments*.  
◇ **Seoul National University**, South Korea.  
B.S. with Honors in Mechanical Engineering, Aug. 2000.

RESEARCH  
PROJECTS     ◇ **Multi-resolution Distance-Gradient Volumes for Collision Detection and Haptic Rendering**  
Developed a collision detection and haptic rendering system by extending distance-gradient fields sampled on octrees as object representation. Developed a  $G^1$  continuous interpolation method for distances sampled on adaptive grids. (Jun. 2004 - Dec. 2006)  
◇ **The Roles of a Haptic Interface and Visual Aids in Drawing in Virtual Reality Environments**  
Explored the effects (on human performance) of visual aids such as shadows, stereo displays and a haptic interface under different conditions in annotating 3D models by marking on surfaces in virtual reality environments. User studies designed with the Taguchi method were done in a mark-up environment that I developed. (Aug. 2001 - May 2003)

WORK  
EXPERIENCE   ◇ **3D Graphics Software Engineer**  
Developed a Hermite curve based key frame animation controller for human face animations. Designed an avatar face silhouette editor for face matching. Built an automated lip-sync system for avatars driven by .wav files using formant frequency detection. (Web-C Intermedia, Seoul, South Korea, Jun. 2000 - Jun. 2001)  
◇ **Graduate Student Instructor**  
Process Optimization for Injection Molding  
Instructing undergraduate students how to construct a mathematical linear model through a set of injection molding experiments designed by the Taguchi method. (UC Berkeley, Jan. 2005 - Dec 2006)

SKILLS        ◇ C++, C, Java, SQL, Python  
◇ 3D Studio Max (proficient with the Maxscript), Microsoft Visual SourceSafe, Alias-Wavefront Maya (with MEL script), MATLAB, Mathematica, CVS, SAS, Adobe Photoshop, Illustrator, Premier, Macromedia Flash.  
◇ MFC, OpenGL, DirectX, Math Library for MATLAB (linking MATLAB to C++), STL.  
◇ Spoken/written English, Korean

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- PUBLICATIONS Shon and McMains, Haptic Force Shading Parameter Effects on Path Tracing Accuracy, 14th Symposium on Haptic Interfaces for Virtual Environment and Teleoperator Systems at IEEE Virtual Reality 2006, March 25-26, 2006, pp. 517-523.
- Shon and McMains, Evaluation of Drawing on 3D Surfaces with Haptics, IEEE Computer Graphics and Applications, Nov/Dec 2004, 24:6, pp.40-50.
- AWARDS
- ◇ Link Foundation Fellowship for Simulation and Training (Sep. 2005 – Aug. 2006)
  - ◇ Bronze Medal in 7th Korean Mathematics Olympiad (Dec. 1993)
- CLASS PROJECTS
- ◇ **Geodesic Line Generator**, Computer Aided Geometric Modeling (CS 284, Fall 2003): Developed a geodesic line generator using the fast marching method. The program generates a curve that minimizes the travel time on the surface between two points that are specified by the user.
  - ◇ **Delaunay Triangulation**, Computational Geometry (CS 274, Spring 2003): Implemented three different Delaunay triangulation algorithms: a divide-and-conquer algorithm using quad edge data structure and two incremental insertion algorithms.
  - ◇ **Subdivision Surfaces Sculpting System with a Haptic Interface**, Solid Modeling (ME 290D, Spring 2002): Implemented a system to edit subdivision surfaces with force feedback from a haptic device. The force feedback is computed by a spring-mass system attached to the subdivision surfaces.
  - ◇ **Escher Torus Tiling**, Solid Free-form Fabrication (CS 285, Spring 2002): Designed a CAD tool that edits the shape of identical tiles that cover a torus without seams or overlaps. The tool can also generate designed tiles in STL format, which can be used in rapid prototyping.
  - ◇ **Hair Simulator**, Foundations of Computer Graphics (CS 184, Fall 2001): As a member of a team of three, built a hair simulator that reacts to exterior forces such as gravity force and wind. Each hair strand is modeled with a set of mass points and rotational springs. The Euler method is used to solve the differential equations. Collision detection between the head and each hair strand is performed at every frame.
- Please visit <http://kingkong.me.berkeley.edu/~yshon> to see demo movies and details about my research and projects.
- OTHER COURSE-WORK
- ◇ Optimization, Differential Geometry, Numerical Analysis
  - ◇ Database, Artificial Intelligence