

## EDUCATION

**Ph.D.** in Computer Science, Georgia Institute of Technology, Atlanta, U.S. *Dec. 2015*

- Advisor: Prof. C. Karen Liu
- GPA: 4.0/4.0

**B.Eng.** in Automation, Tsinghua University, China *Jul. 2010*

## WORK EXPERIENCE

**Software Engineer**, X (formerly Google [x]), CA *Feb 2016 – Present*

- Worked on physics-based simulation.

**Software Engineering Intern**, Google, CA *May 2015 – Aug. 2015*

- Worked on fine-grained video object recognition

**Research Intern**, Adobe Research, WA *May 2014 – Aug. 2014*

- Developed artist-directed dynamics simulation technique for 2D animation

**R&D Intern**, Rhythm & Hues Studios, awarded by Academy of Motion Picture Arts and Sciences, CA

*May 2011 – Aug. 2011*

- Implemented history-free collision handling algorithms for cloth simulation as part of studio tool

## PUBLICATIONS

- **Yunfei Bai**, C. Karen Liu, Danny Kaufman, and Jovan Popovic. “Artist-Directed Dynamics for 2D Animation”, *ACM Transaction on Graphics (SIGGRAPH)*, 2016.
- **Yunfei Bai**, Wenhao Yu, and C. Karen Liu. “Dexterous Manipulation of Cloth”, *Computer Graphics Forum (Eurographics)*, 2016.
- **Yunfei Bai**, and C. Karen Liu. “Coupling Cloth and Rigid Bodies for Dexterous Manipulation”, (*Best Student Paper Award*), *ACM SIGGRAPH Conference on Motion in Games (MIG)*, 2014
- **Yunfei Bai**, and C. Karen Liu. “Dexterous Manipulation Using Both Palm and Fingers”, *IEEE International Conference on Robotics and Automation (ICRA)*, 2014
- **Yunfei Bai**, Kristin Siu, and C. Karen Liu. “Synthesis of Concurrent Object Manipulation Tasks”, *ACM Transactions on Graphics (SIGGRAPH Asia)*, 2012.
- Sehoon Ha, **Yunfei Bai**, and C. Karen Liu. “Human Motion Reconstruction from Force Sensors”, *ACM SIGGRAPH/Eurographics Symposium on Computer Animation (SCA)*, 2011.
- **Yunfei Bai**, Jing Hu, and Yupin Luo. “Self-adaptive Blind Super Resolution Image Reconstruction”, *IEEE International Congress on Image and Signal Processing (CISP)*, 2010.

## ACADEMIA EXPERIENCE

**Graduate Research Assistant**, Advisor: Prof. C. Karen Liu, Computer Graphics Group, Georgia Tech

- **Simulating Human Motion of Object Manipulation** *Aug. 2010 – Present*
  - Introduced a planning and optimization technique to synthesize continuous animation of human manipulating multiple objects and environment features concurrently at various locations in a constrained environment
  - Introduced a physics-based simulation and control technique to synthesize interaction between cloth and rigid bodies for animating cloth manipulation
  - Introduced a control technique for manipulating orientation of an object using robot hand with palm and fingers

- Introduced a sampling-based simulation method for solving inverse dynamics in human walking so that zero residual forces can be guaranteed

**Teaching Assistant**, Computer Animation, Georgia Tech Course CS4496 *Jan. 2011 – Apr. 2011*

**Graduate Research Assistant**, Advised by Prof. Greg Turk, Computer Graphics Group, Georgia Tech  
*Oct. 2010 – Dec. 2010*

- **Reducing Numerical Dissipation in Fluid Simulation**
  - Implemented and compared vorticity confinement method and BFECC to address numerical dissipation problem in fluid simulation

**Graduate Research Assistant**, Advised by Prof. Blair MacIntyre, Augmented Environment Lab, Georgia Tech

- **Augmented Reality Game “Nerdferno”** *Oct. 2010 – Dec. 2010*
  - Built task structure in the augmented reality game “Nerdferno” based on smart phone and Unity

**Undergraduate Research Assistant**, Advisor: Prof. Yupin Luo, Tsinghua National Laboratory for Information Science and Technology *Apr. 2009 – Jun. 2010*

- **Blind Super-Resolution Image Reconstruction**
  - Proposed a self-adaptive blind super-resolution image reconstruction approach based on multiple images

**Undergraduate Research Assistant**, Advisor: Prof. Zhaohui Ye, Dept. of Automation, Tsinghua University

- **Security Protection And Monitoring Robot** *Sep. 2008 – Apr. 2009*
  - Developed a microcontroller based intelligent robot with ability of track finding, automatic following, and making fire alarm through wireless communication, etc.

## HONORS AND AWARDS

- Best Student Paper Award, ACM SIGGRAPH Conference on Motion in Games, 2014
- Scholarship for Academic Excellence, Tsinghua University, 2009
- Prize for Excellence 27<sup>th</sup> Challenge Cup, Tsinghua University, 2009
- Fourth-Place of 10<sup>th</sup> Electronic Design Competition, Tsinghua University, 2008

## PROFESSIONAL ACTIVITIES

- Paper reviewer
  - SIGGRAPH
  - IEEE Transactions on Visualization and Computer Graphics
  - SIGGRAPH/Eurographics Symposium on Computer Animation
  - Computational Visual Media Conference
- Guest speaker for Georgia Tech GEOM group seminar
  - “Dimension Reduction Techniques in Computer Graphics”
  - “Real-time Physics Based Simulation”
  - “Solving Contact Problem in Physics-based Simulation”

## SKILLS SUMMARY

- 7 years research experience in computer graphics, robotics, computer animation, physics-based simulation, machine learning and image processing
- Programming Language: C/C++, Python, Java, C#, Matlab, OpenGL, GLUT, NVIDIA Cg/GLSL, OpenMP, LaTeX, Assembly language, VHDL, SQL
- Tools & Software: Maya, 3ds Max, Premiere, Photoshop, Dreamweaver, Illustrator, Mathematica, Unity, Eigen library, SNOPT, Open Dynamic Engine, FLTK, NVIDIA SDK, Mercurial, Vicon Blade
- Operating System: Mac OSX, Linux, Windows