

# Yusuke Yasui

Phone: (347) 927-8477

E-mail: [yusukeyasui@gmail.com](mailto:yusukeyasui@gmail.com)

URL: <http://yiusay.net>

## WORK EXPERIENCE:

**September 2014 - May 2017 Employer: Lytro, Mountain View, CA**

**Position: MTS in the Computer Vision and Computational Photography Team**

- **Computer Vision**
  - Responsible for all the **geometric calibration** for VR cameras from design and implementation to test in Lytro Immerge project (C++ and OpenCV)
    - ✧ Developed **single camera calibration** tool to estimate lens distortion and intrinsic camera matrix
    - ✧ Developed **multiple camera calibration** algorithm to estimate extrinsic camera matrices using **bundle adjustment**.
  - Developed **background subtraction** algorithm to assist depth estimation
  - Developed **Demosaicing** algorithm based on **machine learning**
  
- **Lightfield camera**
  - Implemented **shader algorithms** to improve the image quality for Lytro Desktop
    - ✧ Developed Depth effect engine for Lytro Desktop 5.0 using C++ and GLSL
    - ✧ Developed light-weight living picture player using precomputation and caching suitable for non-powerful LytroMobile app running on iOS
  - Accelerated Light Field Engine by 3x using CPU multithreads and GPU with GLSL and OpenCL

**January 2012 - August 2014 Employer: Intel, Hillsboro, OR**

**Position: Software Engineer in the Computational Lithography Team**

- Research and implementation of **geometric algorithms** to optimize the geometric pattern on photomasks in Photolithography (C++).
  - Developed **geometric searching algorithm** to quickly find all the locations matching a given geometric pattern among billions of polygons
  - Developed geometric **caching** and **pattern matching algorithm** to reduce total CPU time
  - Working on **big data** using **thousands of CPUs** running in parallel

**July 2010 - September 2010 Employer: Kaleyedoscope, Inc., San Francisco, CA**

**Position: Development Engineer**

- Developed iPad application for e-book reader.

**April 2006 - July 2006 Employer: RIKEN, Japan**

**Position: Research Assistant**

- Developed software to convert consecutive slice of images obtained by CT scanner into a 3D model.

**April 2004 - March 2005 Employer: ASTOM R&D, Japan**

**Position: R&D Engineer**

- Proposed and developed a new **mesh repair** algorithm that enables defective meshes to be utilized in FEM simulation.
- Designed and developed software for **Laplacian Mesh Morphing** to improve the quality of prediction of metal forming.
- Proposed and developed a new image processing algorithm for extracting blood vessels from 2D images of eyes.

## RESEARCH EXPERIENCE:

**August 2006 - December 2011 Department of Mechanical Engineering, UC Berkeley**

- Proposed and implemented a new approach to **find a rotation axis for completely draining workpieces** filled with water. It solved the problem geometrically, and can give interactive feedback to designers.
- Proposed and implemented a new approach to **track fluid filling state** for cleanability of mechanical components. It reduced computational cost dramatically and achieved real-time response.
- Implemented **flexible mesh repair** algorithm for 2D geometry.

**April 2003 - March 2004 Keio University, Japan**

- Proposed and implemented a new approach to **render parametric surfaces per pixel on the GPU in real-time**.

## EDUCATION:

**August 2006 - December 2011 University of California, Berkeley**

**Ph.D. in Mechanical Engineering**

Major: **Manufacturing**

Minors: **Computer Science, Solid Mechanics**

**April 2000 - March 2004**

**Keio University, Japan**

**BA in Environment and Information Studies**

**(Graduated as top student)**

Major: **Computer Science**

## SELECTED PUBLICATIONS:

- **Yusuke Yasui**, Sara McMains, and Thomas Glau, "**Pool segmentation for predicting water traps**," Journal of Manufacturing Systems, 2014.
- **Yusuke Yasui** and Sara McMains, "**Testing a Rotation Axis to Drain a 3D Workpiece**," Computer-Aided Design, in press, doi:10.1016/j.cad.2010.05.004, 2011
- **Yusuke Yasui** and Sara McMains, "**Testing an Axis of Rotation for Workpiece Draining**," Proceedings of SPM '09, San Francisco, CA, Oct, 2009.
- David Dornfeld, Sara McMains, Diego Arbelaez, Miguel Avila, Adarsh Krishnamurthy, Wei Li, and **Yusuke Yasui**, "**Cleanability of Mechanical Components**," Proceedings of 2008 NSF Engineering Research and Innovation Conference, Knoxville, TN, January 2008.
- **Yusuke Yasui** and Takashi Kanai "**Surface quality assessment of subdivision surfaces on programmable graphics hardware**," Proc. International Conference on Shape Modeling and Applications 2004 (Genova, Italy, 7-9 June 2004), IEEE CS Press, pp. 129–136.
- Takashi Kanai and **Yusuke Yasui**. "**Per-Pixel Evaluation of Parametric Surfaces on GPU**," ACM Workshop on General Purpose Computing Using Graphics Processors (Los Angeles, CA, U.S.A., 7-8 August 2004), C-22, 2004.

## PERSONAL STRENGTHS:

- Excellent programming abilities in **C++**, **OpenGL**, **OpenCV**, **GLSL**
- Extensive knowledge of **Computer Graphics** especially in **Geometric Algorithms**
- Significant experience in **Numerical Computation**
- Working knowledge of **WebGL**, **Three.js**, **HTML5**, **CSS 3**, **JavaScript**, **jQuery**, **PHP**
- Quick learning and adaptation to new environments
- Collaborative programmer