Yusuke Yasui

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WORK EXPERIENCE:

September 2018 - Current Employer: Deepen AI, *Santa Clara,CA*
Position: *Software Engineer*

- Research and implementation of computer vision algorithm to accelerate data annotation for autonomous driving applications (C++, python, javascript).
  - ➢ Developed an algorithm to **automatically annotate 3D lidar point clouds**
  - ➢ Developed an algorithm to **generate 3D ground mesh from lidar points**
  - ➢ Developed a **3D point cloud segmentation** tool
  - ➢ Developed a tool to help **2D image annotation** using **deep learning**
  - ➢ Developed a **lidar-camera calibration** tool

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 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.

PERSONAL STRENGTHS:

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