Eric Lee Turner, Ph.D.

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OVERVIEW

Strong background in research, algorithm development, and software engineering. Core areas include Surface Reconstruction, Computer Graphics, Computational Geometry, SLAM, Signal Processing, and Computer Vision.

EDUCATION

University of California - Berkeley
Ph.D. in Electrical Engineering and Computer Sciences May 2015
GPA: 4.00/4.00

University of California - Berkeley
M.S. in Electrical Engineering and Computer Sciences May 2013
GPA: 4.00/4.00

Carnegie Mellon University
B.S. in Electrical and Computer Engineering May 2011
QPA: 3.91/4.00 - Dean's List
Minors in Physics, Computer Science

WORK EXPERIENCE

Google, Inc. 03/2016 - Present
Senior Software Engineer
Research and Development on advanced rendering techniques for the Daydream Virtual Reality Team.
Depth reconstruction techniques.

Indoor Reality, Inc. 06/2015 - 03/2016
Chief Technology Officer (CTO)
Principal Investigator (PI) on multiple federal grants. Technology lead in developing hardware, software, and algorithms used for automatic and rapid indoor building 3D modeling via backpack-mounted ambulatory scanning system. Developed software for data collection, algorithmic processing, and visualization. Supervisor for visualization and deployment development team.

Signetron, Inc. 07/2015 - 03/2016
Software Architect
Algorithm and software development for rapid indoor modeling, automatic building energy audits, and virtual tours from handheld scanning system. Principal engineer on software and hardware development, including localization and 3D modeling algorithms. Supervisor for team of software engineers.

EECS Department - UC Berkeley 01/2015 - 05/2015
Graduate Student Instructor
Course EE 122: Introduction to Communication Networks
Taught discussion sections, held office hours, graded homeworks/exams.

@Maps 08/2014 - 12/2014
Principal Engineer
Developed hardware systems and surface reconstruction software for building modeling. Research and development of camera calibration procedures.

Speir Technologies 01/2013 - 01/2014

Software Development Consultant
Developed prototype demo application and 3D modeling algorithms for remote viewing medical ultrasound scanning. Developed client-server model for remote medical scanning, sensor drivers interface, and 3D meshing techniques for live streaming of patient geometry.

MIT Lincoln Laboratory 05/2011 - 08/2011
Summer Intern - Group 104: Intelligence and Decision Theory
Developed algorithms for creation of synthetic test data for Synthetic Aperture Radar (SAR) Coherent Change Detection (CCD) track-finding.

ECE Department - Carnegie Mellon 01/2011 - 05/2011
Teaching Assistant
Course 18-391: Noisy Signal Processing
Wrote homework reference solutions, taught weekly office hours.

Qualcomm 05/2010 - 08/2010
Software Summer Intern - QCT Modem Integration Team
Developed/automated methodology for optimizing and removing redundancies in client specs of processor builds.

Flatirons Solutions 05/2008 - 08/2008
Summer Intern
Developed flight path modeling application for FAA. Wrote application to estimate cost/efficiency analysis for air traffic routes, interfaced with Google Earth.

RESEARCH EXPERIENCE

Video and Image Processing Lab - U.C. Berkeley 08/2011 - May 2015
Ph.D. Graduate Student
3D and 2D surface reconstruction algorithms for architectural modeling. Automatic reconstruction of indoor building environments from LiDAR and imagery data on an ambulatory backpack-mounted scanning system. System hardware design and assembly, including developing sensor drivers and processing architecture. Analysis of building geometry for room-layout and energy efficiency modeling.

Spiral Project - Carnegie Mellon 08/2010 - 05/2011
Honors Research Undergraduate
Analysis of efficiency and error for Synthetic Aperture Radar (SAR) algorithm for logic-in-memory implementation.

Spiral Project - Carnegie Mellon 05/2009 - 08/2009
Summer Research Undergraduate
Implementation and analysis of search techniques for Spiral's code optimization engine. Developed genetic search algorithm for optimization of hardware-dependent software implementations of DCT, FFT, and Matrix Multiplication.

Robotics Institute - Carnegie Mellon 09/2008 - 12/2008
Research Assistant
Design of user interface for LiDAR scans exported from variety of autonomous robotic systems.

COMPUTER SKILLS

Programming Languages: C/C++, Java, Python, BASH, SML, Basic, x86, JavaScript, Perl, NASM
Markup Languages: HTML, LaTeX

Software: Matlab, Mathematica, Maple, Unity, Autodesk Revit, Recap, Navisworks, AutoCAD, SolidWorks, Visual Studio, Git, SVN, Doxygen
Frameworks: Eigen, Boost, OpenCV, PCL, OpenGL, GLSL, Qt, Android, Google Tango, Spring, Processing, XStream

AWARDS

Awarded Best Student Paper - GRAPP 2014 01/2014
9th International Joint Conference on Computer Vision, Imaging, and Computer Graphics Theory and Applications

Awarded NSDEF Fellowship 09/2013 - 05/2016
Funded by Office of Naval Research (ONR)

Presented at CMU Meeting of the Minds 05/2011
- Won First Place Lockheed Martin ECE Undergraduate Project
- Won Third Place CIT Honors Research Poster Competiton

PUBLICATIONS

Limits of Peripheral Acuity and Implications for VR System Design, Journal of Society for Information Display 2018

Sensitivity to Peripheral Artifacts in VR Display Systems, Society for Information Display 2018

Phase-Aligned Foveated Rendering for Virtual Reality Headsets, 25th IEEE Conference on Virtual Reality and 3D User Interfaces 03/2018

Foveated Pipeline for AR/VR Head-Mounted Displays, Information Display 11/2017

Identification of Energy Conservation Measures Towards Zero Carbon Building Energy Performance with the Rapid Building Energy Modeler and the Energy Analysis Engine, ZCB 2016 09/2016

Automatic Indoor 3D Surface Reconstruction with Segmented Building and Object Elements, Fifth Joint 3DV Conference 10/2015

3D Modeling of Interior Building Environments and Objects from Noisy Sensor Suites, Ph.D. Thesis, Department of Electrical Engineering and Computer Sciences, University of California Berkeley 05/2015

Multistory Floor Plan Generation and Room Labeling of Building Interiors from Laser Range Data, Communications in Computer and Information Science 2014

Fast, Automated, Scalable Generation of Textured 3D Models of Indoor Environments, Journal of Selected Topics in Signal Processing 08/2014

Image-Based Position of Mobile Devices in Indoor Environments, Multimodal Location Estimation of Video and Images 2014

Floor Plan Generation and Room Labeling of Indoor Environments from Laser Range Data, GRAPP 2014 01/2014

Reduced-Complexity Data Acquisition System for Image Based Localiza-

tion in Indoor Environments, IPIN 2013 10/2013

Image Based Localization in Indoor Environments, International Conference on Computing for Geospatial Research and Applications 07/2013

Watertight Planar Surface Meshing of Indoor Point-Clouds with Voxel Carving, Third Joint 3DV Conference 06/2013

Watertight Floor Plans Generated From Laser Range Data, Master's Thesis 05/2013

Inserted Simulated Tracks into SAR CCD Imagery, Society for Modeling & Simulation International (SCS) 2013 Autumn Simulation Multi-Conference (AutumnSim'12) 10/2012

Watertight As-Built Architectural Floor Plans Generated from Laser Range Data, 3DIMPVT 10/2012

Sharp Geometry Reconstruction of Building Facades Using Range Data, ICIP 2012 09/2012

Local Interpolation-based Polar Format SAR: Algorithm, Hardware Implementation and Design Automation, Japan Society for the Promotion of Science 06/2012

Polar Format Synthetic Aperture Radar in Energy Efficient Application-Specific Logic-in-Memory, ICASSP 2012 05/2012

Energy Efficient Application-Specific Logic-in-Memory for Interpolation in Synthetic Aperture Radar, High Performance Embedded Computing (HPEC) 09/2011