Erik Wijmans

Education

2017–Present **Ph.D. in Computer Science (1st year student)**, *Georgia Institute of Technology*, Atlanta, GA.

May 2017 **Bachelor of Science, Computer Engineering, Summa Cum Laude**, *Washington University in St. Louis*, St. Louis, MO.

May 2017 **Bachelor of Science, Engineering Physics, Magna Cum Laude**, *Juniata College*, Huntingdon, PA.

Publications

Y. Cao, S. Li, and E. Wijmans. (cross-)browser fingerprinting via os and hardware level features. In *24nd Annual Network and Distributed System Security Symposium, NDSS*, 2017.

E. Wijmans and Y. Furukawa. Exploiting 2d floorplan for building-scale panorama rgbd alignment. In *Computer Vision and Pattern Recognition, CVPR*, 2017.

Research

Nov 2017 – Present
EmbodiedQA Matterport3D, *Georgia Tech*, Atlanta, GA.
Working with Prof. Batra, Prof. Parikh, and, Prof. Essato utilize RGB-D data for EmbodiedQA in the Matterport3D environment

- Utilizing the PointNet++ deep neural network architecture proposed by Qi et. al.
- Extending the MINOS simulator by Savva et. al. to utilize the RGB-D sensor data from the Matterport3D dataset.

Aug 2015 – Nov 2016
RGBD Panorama Alignment, *Washington University in St. Louis*, St. Louis, MO.
Worked with Prof. Yasutaka Furukawa to design a new method for RGBD panorama rectification

- Developed an algorithm that extracts floor plan information and dominant directions from a 3D point cloud
- Aligned with the ground truth floor plan by comparing gray-scale images and generated candidate placements using a novel image matching algorithm
- Selected a final placement for each point cloud by examining how consistent placements are with one another
- Encoded a preference for mutual exclusion using a novel energy term
- Project site: cvpr17.wijmans.xyz

May–Aug 2016	**NSF REU Fellow, Research Experience for Undergraduates Program**, *Lehigh University*, Bethlehem, PA.

Worked with Prof. Yinzhi Cao and Mr. Song Li to develop a new way to uniquely identify computers (machine fingerprinting)

- Created the first fingerprint to successfully utilize hardware and OS level features
- Nearly 100% unique fingerprint for single browsers
- Created a website that collects data and sends it to a server for analysis
- Created tools to analyze data and calculate the entropy of machine fingerprints
- Fingerprint collection demonstration: uniquemachine.org

May–Aug 2015	**NSF REU Fellow, Research Experience for Undergraduates Program**, *Washington University in St. Louis*, St. Louis, MO.

Worked with Prof. Yasutaka Furukawa and Dr. Satoshi Ikehart to develop an Android® application that guides the user through the process of capturing a 360° panorama while also logging IMU information

- Created a panorama stitching algorithm that utilizes the IMU information
- Implemented a path rectification algorithm

Honors and Awards

- Washington University in St. Louis Department of Computer Science and Engineering Outstanding Junior Award (3 awards for ∼100 eligible juniors)
- Harold P. Brown Engineering Fellowship (2 awards for ∼100 applicants)
- William E. and Florence Schmidt Memorial Scholarship
- Calvert Ellis Scholarship
- Member of Sigma Pi Sigma (National Physics Honor Society)

Posters and Presentations

2017	**Computer Vision and Pattern Recognition**, *CVPR 2017*, Honolulu, Hawaii.

Poster for my CVPR 2017 paper

2016	**Lehigh University REU Symposium**, *Lehigh University*, Bethlehem, PA.

Created and gave an oral presentation of my research with Prof. Cao

2015	**Washington University in St. Louis REU Symposium**, *Washington University in St. Louis*, St. Louis, MO.

Created and presented a poster of my summer research with Prof. Furukawa

2015	**Juniata College Liberal Arts Symposium**, *Juniata College*, Huntingdon, PA.

Created and presented a poster of my Advanced Physics Lab final project