

# Utku Baran, Ph.D.

Hardware Engineer 2 @ Microsoft

Permanent Resident of the USA



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## EDUCATION

### Ph.D. in Electrical Engineering

University of Washington, Seattle, 2016

### Certificate in Technology Entrepreneurship

Foster School of Business, Seattle, 2016

### M.Sc. in Electrical Engineering

Koç University, Istanbul, 2012

### B.Sc. in Electrical Engineering

Koç University, Istanbul, 2010

## EXPERTISE

- MEMS Design (Actuators, Sensors)
- MEMS Characterization
- Microfabrication Processes
- 2D/3D CAD
- Finite Element Analysis
- Piezoelectric & Electrostatic actuators
- Piezoresistive & Optical Sensors
- Failure Modes and Effects Analysis
- Reliability Testing
- Data-Analytics and Reporting

## AWARDS

### College of Engineering Research Award

University of Washington, 2016

*Nominated by EE Department, single recipient is selected by the college.*

### Optics and Photonics Scholarship

SPIE, 2015

*Merit based, for the prospect of long-term contribution to the field of optics*

## PROFILE

Lead design engineer of advanced MEMS in Hologram display, with more than 5 years of experience in end-to-end prototyping of electro-mechanical systems. Adept user of ANSYS, SolidWorks, Python, Matlab, L-edit, and JMP. Experienced in microfabrication processes. Author of 24 journal articles and inventor of 4 granted (8 pending) patents. Demonstrates excellent cross-functional collaboration skills, verbal and written communication abilities.

## EXPERIENCE

### Hardware Engineer 2, Microsoft, Redmond, 07/2017-Present

- Design advanced micro-electro-mechanical parts in Hologram display team.
- Lead prototyping efforts by managing projects with various internal teams (process, mechanical, electrical engineering) and external vendors.
- Develop automated test systems using Python/Labview for characterization and reliability experiments (mechanical, optical, environmental, electrical).
- Manage reliability testing activities (development, maintenance and budget).
- Conduct failure analysis using tools such as microscopes, SEM, SMUs.
- Own the design review, specification and FMEA documents.
- Analyze KPIs using software tools (e.g. SQL and JMP) to drive decisions.
- Supervise a test engineer, with direct responsibility for his work performance.

### Post-Doctoral Scholar, Caltech, Pasadena, 02/2017-07/2017

- Worked on developing MEMS-enabled optical imaging probe used to investigate biomarkers of pre-term labor in a clinical trial.

### Research Assistant, University of Washington, Seattle, 06/2013-06/2016

- Ph.D. thesis on optical coherence tomography for medical applications.
- Researched OCT systems, algorithms and applications resulting in tangible prototypes for patent and publications.
- Integrated MEMS scanners with an ultra-fast swept laser source to enable real-time optical coherence tomography 3D angiography systems.

### Research Assistant, Koç University, Istanbul, 09/2010-06/2012

- MSc thesis on optical MEMS design for displays, with Microvision.
- Designed, micro-fabricated and characterized innovative MEMS mirrors.

## SELECTED PATENTS & PUBLICATIONS

- "Display device having scanning mirror system", US Patent App, 16/295,842, 2020, Assignee: Microsoft, 2020
- "Adhesive Bonded Micro Electro Mechanical System", US Patent App, 16/239,418, Assignee: Microsoft, 2020
- "Adjusting a resonant frequency of a scanning mirror", US Patent Granted, 16/020,550, Assignee: Microsoft, 2020
- "Piezoelectric Actuated Device, Method and System", US Patent Granted to Microvision, US9105834B2, 2015
- U. Baran, et al. "Resonant PZT MEMS Scanner for High Resolution Displays", IEEE JMEMS, 2012