Oguzhan Avci, PhD

Principal Optical Scientist

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Summary

Optical scientist with a background in designing, modeling, and prototyping 3D optical imaging & sensing architectures. Experienced in free-space optics, biomedical optics, fiber optics, silicon photonics, & electrical engineering.

Skills

Imaging and illumination systems, light sources, polarization optics, thin film optics, electromagnetic modeling, developing optics for scale, design of experiment methodologies, optical alignment, operation of optical/electrical test equipments, design and characterization of free-space, fiber, photonic integrated systems, statistical data analysis, optical (UV) lithography, mask design, wet etching. Proficient in MATLAB, Zemax, Python, Java.

Work Experience

Aeva Inc. *Mountain View, CA*

Principal Optical Scientist *01/2022–present*

- Lead architect working with a team of interdisciplinary engineers designing next-generation coherent LiDARs
- Explore transformative ideas in coherent LiDAR beyond automotive applications

Senior Optical Scientist *02/2020–01/2022*

- R&D lead in a team of optical engineers exploring next-generation coherent LiDAR architectures
- Designed and prototyped novel coherent LiDARs and transferred them from bench to high volume products

Optical Systems Engineer *07/2018–02/2020*

- Led free-space design of coherent LiDAR systems for self-driving cars
- Modeled light budget, signal-to-noise ratio, laser eye safety for coherent LiDAR
- Collaborated with cross-functional teams to integrate optical, mechanical and photonic sub-modules

Apple Inc. *Cupertino, CA*

Instrumentation Design Scientist – Laser Systems *10/2017–07/2018*

- Designed and developed instruments for calibration and testing of optical modules on several Apple products including iPhone Xs & iPad Pro
- Worked with cross-functional teams at Apple as well as international vendors to scale the instruments designed for mass production
- Enforced designs for eye/skin safe laser systems on Apple products

Boston University – Optical Characterization and Nanophotonics Laboratory *Boston, MA*

Graduate Research Assistant *6/2013–9/2017*

- Designed, modeled interferometric optical imaging/non-imaging systems
- Worked with cross-functional scientists to prototype sensors for nanoparticle sensing and characterization
- Contributed to grants including NSF SBIR & EU Horizon 2020, which brought in over $2M in total

Mitsubishi Electric Research Laboratories *Cambridge, MA*

Graduate Research Intern *5/2015–8/2015*

- Designed and prototyped an LED-based LiDAR system for self-driving cars
- Modeled light budget, signal-to-noise ratio, laser eye safety for time-of-flight LED LiDAR

Harvard-MIT Division of Health Science and Technology *Cambridge, MA*

Undergraduate Research Intern *6/2011–9/2011*

- Designed a temperature-controlled microfluidic system to locally capture and release CD4 cells

Education

Boston University College of Engineering *Boston, MA*

Doctor of Philosophy in Electrical Engineering *9/2012–9/2017*

University of California, San Diego Jacob School of Engineering *La Jolla, CA*

Exchange Student, Department of Electrical and Computer Engineering *9/2010–6/2011*

Bilkent University Faculty of Engineering *Ankara, Turkey*

Bachelor of Science in Electrical and Electronics Engineering *9/2008–6/2012*

Publications & Patents

Authored 17 peer-reviewed journal articles, conference proceedings. Filed 20+ patent applications with the US patent office. Inventions span from LiDAR architectures to coherent imaging sensors for diagnostics. Please see my Google Scholar page for an up-to-date list.