Nick Antipa

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Curriculum Vitae

▬ Education

2014–2020 **PhD Candidate, University of California Berkeley**, *Electrical Engineering and Computer Sciences*, Advisors: **Laura Waller** and **Ren Ng**.

Research Area: **Computational Imaging**

2009 **MS, University of Rochester**, *Optics*, Advisor: **Julie Bentley**.

Thesis: *Effective Utilization of Off-the-Shelf Optics*

2008 **BS, University of California Davis**, *Optical Science and Engineering*.

▬ Industry Experience

2009–2014 **Optics Engineer, Lawrence Livermore National Lab**, *National Ignition Facility (NIF)*, Livermore, California.

▬ Research Overview

Compact Neural Imaging Devices
We are designing compact (2 to 3 grams) head-mountable fluorescent microscopes capable of time-resolved, *in-vivo* 3D imaging of flourescent neural signal on freely behaving animals (e.g. mice).
Lensless Snapshot Compressive Imaging
This lensless system consists solely of a diffuser placed in front of an image sensor. Using the inherent multiplexing properties of optical diffusers, high-dimensional image data such as volumetric 3D or high speed scene dynamics are encoded into a single 2D measurement. This information can be recovered from a single 2D measurement by solving a compressed sensing inverse problem.
Simultaneous end-to-end optimization of optics and image reconstruction
Using data-driven machine learning techniques, the goal of this work-in-progress is to simultaneously optimize the optics and the reconstruction algorithm for task-specific sensing problems (e.g. neurons).
Single-Shot Diffuser-Encoded Light Fields
By placing a diffuser inside a traditional lens-based camera, a 4D light field can be reconstructed from a single 2D diffuse image.

▬ Honors and Awards

2019 **Best Paper**, *Video from Stills: Lensless Imaging with Rolling Shutter*, IEEE International Conference on Computational Photography (ICCP).

2017 **Best Demo**, *DiffuserCam: A Diffuser-Based Lensless Camera*, IEEE International Conference on Computational Photography (ICCP).

2016 **Best Paper**, *Single-Shot Diffuser-Encoded Light Field Imaging*, IEEE International Conference on Computational Photography (ICCP).

2015	**Outstanding Graduate Student Instructor**, *Electrical Engineering 118/218a: Introduction to Optical Engineering*, UC Berkeley.
2012	**Engineering Division Award**, *Outstanding contribution to the National Ignition Facility Capsule Mapping System*, Lawrence Livermore National Laboratory.
2011	**NIF and Photon Science Award**, *Outstanding Contributions in Ignition Capsule Metrology*.
2010	**NIF and Photon Science Award**, *Development of Prototype Capsule Surface Inspection*.
2008	**Graduate with Highest Honors**, *UC Davis*.
2008	**Applied Science Departmental Citation**, *UC Davis*.

Students Mentored

Ugrad	**Sylvia Necula**, *Georgia Tech*, Summer 2015.
	Jon Silberstein, *UC Berkeley*, Fall 2015.
	Camille Biscarrat, *UC Berkeley*, Spring 2017 - Summer 2018.
	Shreyas Parthasarathy, *UC Berkeley*, Spring 2017 - Summer 2018.
	Essence Hansberry, *UC Berkeley*, Summer 2017.
	Patrick Oare, *UC Berkeley*, Summer 2018 - 2019.
	Jonathan Fung, *UC Berkeley*, 2018 - present.
Grad	**Kyrollos Yanny**, *UC Berkeley*, Spring 2017 - present.

Teaching

2018	**EE123: Digital Signal Processing**, *Graduate Student Instructor*, Fall.
2015	**EE118/218a: Introduction to Optical Engineering**, *Graduate Student Instructor*, Fall.

Invited Talks

2020	**Stanford SCIEN Seminar**, *High Dimensional Compressive Imaging with Pseudorandom Optics*.
2019	**Apple**, *Compressive High Dimensional Imaging*.
2019	**IEEE Photonics Society Silicon Valley Chapter**, *Imaging Without Lenses*.
2018	**Rice University**, *Diffuser-based Computational Imaging*.