

Jesse Lu

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JOB OBJECTIVE

A full-time Research Scientist position with Nvidia Research with starting date of November 2012 (upon completion of doctoral degree).

EDUCATION

Stanford University, PhD, Electrical Engineering, November 2012 (in progress)
Stanford University, Masters of Science, Electrical Engineering, May 2012
University of California Los Angeles, Bachelor of Science, Electrical Engineering, June 2006

HONORS

Stanford Graduate Fellowship, Stanford University, 2007
Dean's Honors List, University of California Los Angeles, five quarters

EXPERIENCE

Graduate Researcher	Jelena Vuckovic Group Stanford University	2007-Present
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Existing nanophotonic design process consisted of trial-and-error where each simulation about 24 hours to complete. Implemented FDTD and FDFD simulation software on Nvidia GPUs to bring simulation times down to 10 minutes. Also developed a novel "objective-first" nanophotonic design algorithm and demonstrated automated design of small-footprint, high-efficiency waveguide couplers.

Undergraduate Researcher	Eli Yablonovitch Group University of California, Los Angeles	2005-2006
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Surface plasmon focusing device required a grating coupler to inject energy into the surface plasmon mode. Wrote a Matlab program interfacing with a FEM package (COMSOL), developed a hierarchical optimization routine as well as an extended transfer matrix model to produce first-ever thoroughly optimized grating coupler design.

Research Assistant Intern	Inko Pellicles Sunnyvale, CA	Summer 2003
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Pellicle removal left residue on expensive lithography masks. Assisted in researching and developing a UV irradiation process to modify the adhesive properties of the glue.

PROGRAMMING

Fluent in Python, CUDA, and Matlab.
Currently working with Git and Amazon EC2.

PUBLICATIONS

"Objective-first design of high-efficiency, small-footprint couplers between arbitrary nanophotonic waveguide modes" Jesse Lu, Jelena Vuckovic (Optics Express, 2012).
"Inverse design of a three-dimensional nanophotonic resonator" Jesse Lu, Stephen Boyd, Jelena Vuckovic (Optics Express, 2011).
"Inverse design of nanophotonic structures using complementary convex optimization" Jesse Lu, Jelena Vuckovic (Optics Express, 2010).
"Numerical optimization of a grating coupler for the efficient excitation of surface plasmons at an Ag-SiO₂ interface" Jesse Lu, Csaba Petre, Josh Conway, Eli Yablonovitch (JOSA B, 2007).