Jesse Lu

Who am I? A problem solver.

Not every problem, not all problems, and not by myself; but at the heart of it, solving problems is what I do well, it's what I enjoy doing, and it's what I would like to do at Lytro.

I want to join Lytro in solving technically-challenging, world-changing problems.

A solver: technologist, innovator, and communicator.

Technologist: has a deep proficiency in a unique set of technical areas.

GPUs I have developed multiple electromagnetic simulation packages for the GPU, the latest being a multi-GPU, dynamically-compiled electromagnetic solver based on CUDA.

Physics I did my PhD in nanophotonics and have a deep expertise in electromagnetics, as well as a general proficiency in all things scientific.

Optimization During that PhD I developed an optimization paradigm for nanophotonic structures, and understood the power of convex optimization and related techniques.

Innovator: finds and combines the technical pieces needed to create something amazing.

Learns fast I intentionally expose myself to other disciplines in order to "connect the dots" in a powerful way, and I quickly incorporate their salient ideas into my own projects.

Fails fast When you innovate, you suceed only after many failures. I wittle down new features/methods into their simplest viable test cases in order to fail as fast as possible.

Communicator: disseminates the results of innovation and engages others in furthering innovation.

Public speaking Stand me up in front of a crowd, and I'll love it. One of my passions is to be able to bring others to that "Aha!" moment, especially concerning complex technical subjects.

Connecting Or put my in a room with a single person, and I'll love that too. I am always eager to learn and I've found that questioning and exploring someone else's knowledge and perspectives is often the best way to do so.

In conclusion, I believe that great companies are simply a collection of great problem-solvers tackling great problems and I hope to join Lytro in doing so[1].

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JOB OBJECTIVE

A full-time position in Lytro 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

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

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 hierarchal 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

Pellicle removal left residue on expensive lithography masks. Assisted in researching and developing a UV irradition 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).