**Insight essay questions (1000 characters)**

***General questions***

*Describe your professional experience and/or research to a non-expert.*

I’m currently an engineer at Lam Research, a Silicon Valley semiconductor capital equipment manufacturer. I work with leading chipmakers (e.g., Micron, Intel, Samsung) to design the chemical/physical processes that shape the nanoscale features which ultimately become the bits used in future generations of NAND (nonvolatile, e.g., flash drives) and DRAM (volatile, e.g., main memory) devices.

As PhD student at UChicago, and later a postdoc at Stanford, I developed solution-processible inorganic materials for transistors, LEDs, and solar cells. Complementing my experimental work was a heavy emphasis on developing MATLAB code to extract various geometric properties of nanoscale objects contained within electron microscopy images.

These experiences have given me a somewhat unusual perspective at the interface of hardware and software, from bottom-up assembly of individual atoms, to monitoring data accumulated by thousands of sensors, and ultimately extracting insights from image data.

*What programming, scripting, databases, or statistical languages have you worked with, and in what capacity?*

Python. My side project analyzing single-family home prices in the Bay Area

Python, R, and MATLAB – describe projects for each.

*Please describe any relevant side projects you have completed that highlight your transferable skills (unrelated to coursework).*

*Please describe any relevant coursework you have completed that highlight your transferable skills.*

Most recently - Udemy: machine learning, statistics courses

PhD research – MATLAB for analysis of microscopy images – published JACS 2014

During PhD/Postdoc – Python and MATLAB courses given by UChicago Library, software carpentry workshops offered at Stanford

**Data science**

*What statistical methods or machine learning models have you worked with and in what capacity?*

*What excites you about becoming a data scientist and working in the tech industry?*

As an engineer at a Silicon Valley semiconductor company, I’ve seen first-hand how data collection, storage, and analysis is reshaping the world. Because global data storage demand is growing at > 50% annually, the data economy is the primary driver of revenue for chipmakers. It is also the largest opportunity to improve the efficiency of the semiconductor manufacturing process, since speed and uniformity gains attained by machine learning can increase output volume at minimal added cost.

Motivated by the desire to acquire the relevant skillset, I’ve used my PhD coding experience as a springboard to build a side project focused on a personal passion of mine: figuring out how I might become a homeowner in this part of the country. Frankly, I found tremendous enjoyment in learning to scrape data from the web, visualize it with maps and scatter plots, and build a model that explains how factors such as commute time, school quality, and crime rate influences the market value of a house.

*Any comments or additional information you wish to share with us?*