

High Performance Computing in and out of Academia

John Shumway, Ph.D.

Software Engineer, Google,
(previously- Prof of Physics at Arizona State University)

Abstract:

Software engineers and physicists both push computers to their limits, but there is often little overlap in their training and careers. In this talk I will share some examples from my experience in jobs spanning both fields. In my group's quantum Monte Carlo research, we combined physics and math with software engineering to get insights into semiconductor quantum dots. I'll show how path integrals can quantify photorecombination rates and quantum exchange. Next, I describe work with other physicists in a small company, modelling oil and gas flow deep underground, making heavy use of mathematics and specialized hardware. I'll finish with a scientist's perspective on software engineering careers in cloud computing.

Bio:

John Shumway has worked in computing for thirty years, as a university student and tenured professor, as a postdoc at the DOE National Renewable Energy Laboratory, in a small company in the petroleum industry, and as a software engineer in cloud computing at Google. His academic research is in the application of quantum Monte Carlo techniques to problems in semiconductor nanostructures. His current work at Google supports teams of developers on highly-distributed database systems.