

Dear Hiring Team,

I am interested in this position because the job description aligns very well with my professional goals. I am currently looking for a career doing work that leverages computational power to solve complex problems in science. I have been lucky enough to do this kind of work in an academic setting and in industry, and to have been exposed to multiple fields in which this work is done.

The primary experience I have that is relevant to this position is in developing software and data analysis techniques for scientific research. This work has taken three forms: writing code to produce data from simulations or hardware, writing code to process data, and writing code to create and optimize workflows for performing the latter two tasks.

In my work at University of Oregon, I developed theoretical models of macromolecules, and validated these models using molecular dynamics simulation data. Typically, this involved writing shell scripts to run simulations in GRO-MACS on a High Performance Computing System, and processing the output using a combination of Python and Fortran. To do this properly, I had to develop a deep understanding of the physics of both the theoretical model and the simulated physical models. This work also required writing code for data analysis that scaled to  $\sim 1$ -10TB of data, and communicating the results of my analysis to a research group through data visualizations.

At Thermo Fisher Scientific, I have been working in the Advanced Technology division doing research on Focused Ion Beam (FIB) technology. Initially, this involved running experiments on a Thermo Fisher dual-beam system, which required careful programming to control delicate hardware for experiment automation. More recently, I have been working on a project to optimize novel column designs using FIB simulations in the General Particle Tracer simulation engine. My work at Thermo Fisher has been an exciting opportunity to see theoretical results validated experimentally, and vice versa, with excellent agreement between the two.

I am very excited to be applying for jobs doing scientific research at UCLA and I hope to hear from you soon. Thank you.

Sincerely,  
Jeremy Welsh-Kavan