

Justin Skycak

**Graduation Year:** First Year

**College:** Science

**Major(s):** Mathematics and (hopefully) Economics

**Minors(s):** n/a

**Scholar Group Membership:** Glynn

**Did you received other funding for this project?:** CUSE, COS, FYS

**Could you have completed this project without CUSE funding?** No

**More details on CUSE funding assistance?**

**Project Title:** Computational Neuroscience at LANL

**Project Location:** New Mexico Consortium in Los Alamos, NM

**ND Faculty Mentor:** Prof. Dervis Can Vural

**Project Type:** Research, Internship, Research Assistantship

**Why did you undertake this project/experience?** Deepen your knowledge of a topic or issue, Career discernment and/or preparation

**Did your funded experience help you:**

**[Deepen your understanding of your coursework or field of study]:** Yes

**[Discern your interests and post-bac goals]:** Yes

**[Become confident in your ability to set and achieve your goals]:** Yes

**[Gain a more nuanced view of local, national, or global communities]:** Yes

**[Improve your written and verbal communications skills]:**Yes

**Tell us about your experience.**

I worked in a lab that used a brain-inspired algorithm for computer vision. The lab created a code library, which they call PetaVision, and I attempted to find oscillations in neural firing rates using the PetaVision code. However, the code was somewhat buggy, so I had to spend most of my time attempting to debug the code. Ultimately, I was not able to find the oscillations I had initially searched for. I believe that if the code worked well, I would have been able to find these oscillations. I will likely continue investigating oscillations in the algorithm, but I will take a purely mathematical approach (to which I am more inclined) than building a computer simulation.

**Describe the impact this project had, both on you as a student-scholar and on the people you worked with.**

I realized that although I enjoy the mathematical aspects of computer simulations, I do not enjoy the non-mathematical parts of program development. I am more big-picture oriented and I would like to pursue mathematical neuroeconomics rather than code-intensive computer vision programming.

I think the people I worked with realized that they need to make their code less buggy and easier to use if it is to become popular in the computer vision community. I also think that they

