

Paul O'Toole

Graduation Year: Senior

College: Engineering

Major(s): Chemical and Biomolecular Engineering

Minors(s): Bioengineering

Scholar Group Membership: No

Did you received other funding for this project?: No

Could you have completed this project without CUSE funding? No

More details on CUSE funding assistance?

Project Title: MAPPER

Project Location: University of Notre Dame

ND Faculty Mentor: Dr. Jeremiah Zartman

Project Type: Research

Why did you undertake this project/experience? Research/experience necessary for senior thesis or capstone project, Prepare for graduate school (MA or PhD), Prepare for professional school (MD, MBA, JD), Prepare for national fellowships, Career discernment and/or preparation

Did your funded experience help you:

[Deepen your understanding of your coursework or field of study]: Very Much

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

[Become confident in your ability to set and achieve your goals]: Very Much

[Gain a more nuanced view of local, national, or global communities]: Not Applicable

[Improve your written and verbal communications skills]:Yes

Tell us about your experience.

Over the summer I conducted research in Dr. Jeremiah Zartman's bioengineering lab. This work was a continuation of the work I have done for Dr. Zartman over the past two years. The main purpose of my work is to develop an image data analysis tool for the lab to use analyze data. Most of my work consists of programming in MATLAB. Prior to this summer, I worked on the development of a program that extracts statistics from datasets of Drosophila embryos. However, over the summer I worked on a separate tool that preprocesses these datasets so that they can be analyzed. This tool had been developed and submitted for publication several years ago, but was rejected and abandoned. I worked on improving and resubmitting this publication. Currently, the publication has been vastly improved and is close to re-submission. This project helped me expand my programming skills, learn about image pre-processing, and gain experience in leading a project.

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

This project had a significant impact on both the people I worked with and me. This project taught me important leadership and organizational skills, as I was tasked with making decisions about the direction of the project. In addition, I gained technical skills in programming and image analysis. Furthermore, this project impacted the people I worked with. I formed beneficial work relationships with my coworkers and helped contribute to their projects as they helped me with my own. Overall, this project was valuable for everyone in the lab.

Describe how this experience is connected to your plans as a student or future professional.

This experience is connected to my future plans. I intend on completing a senior thesis, and my summer work will serve as the foundation for my thesis. Furthermore, I plan on either attending graduate school to continue my studies in bioengineering or going into a bioengineering industry. My research in bioengineering has provided me with valuable experience in the field I intend to pursue and helped me discover my interest in programming. Overall, this project has helped me prepare for my future.

What advice would you give other students who are planning to pursue similar projects?

I would advise other students pursuing research to work hard, explore various topics, and to avoid getting discouraged by failures. A strong work ethic is very important for succeeding in research projects, as there are always more papers to read, more variables to test, and more methods to evaluate. Research is continuous and requires constant work to succeed. It is also important for prospective researchers to explore different research subjects to discover their interests and the topics they are passionate about. I discovered a passion for programming during my research that otherwise I would have never known. Finally, failures and mistakes are inevitable in research, and it is important to remain determined and avoid getting discouraged by failures.

I acknowledge that this form has been filled out truthfully and to the best of my ability. I understand that this information will be shared with many different CUSE constituencies. As such, I have provided as much useful information as I was able. I understand that CUSE will not complete my award disbursement until this form is successfully completed. If I have any questions or concerns, I will contact CUSE before submitting this form. To illustrate that you understand all of these points, please enter your Notre Dame email in the box below.
potoole2@nd.edu

