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SULI Spring 2021

General Audience Abstract

During my SULI internship I worked with Maurice Garcia-Sciveres and Xiangyang Ju to help develop an algorithm that can locate and track stellar streams during Spring of 2021. This project was very satisfying and also challenging at times. There were moments where nothing seemed to be working right and other moments where everything seemed to be working perfectly. Initially the project was a bit rough as we scrambled to figure out how to go about detecting stellar streams but once we found a method that was quick and worked well, the project went smoothly thereafter.

The project began with an idea from Maurice to track stellar streams using techniques used in particle physics. After this initial spark we developed the algorithm from the ground up using a useful machine learning package called FAISS. Each week we would get together and brainstorm ideas and techniques. My role in this project was to take these ideas and implement them into an algorithm. My work has taught me a lot about coding and organization. It has exposed me too many new tools within the world of coding. The final product was a fully automated program that can extract and analyze data for stellar streams. Once a stellar stream is found it has the ability to track this stream as far as it extends as well as returning many useful characteristics of that stream once it is finished.

Overall this project helped me realize how exciting research can be. This experience has helped me realize my strengths and weaknesses while also showing me how powerful uninterrupted focus can be. My involvement in this project has allowed me to sharpen my coding skills and has prepared me for a life of research in graduate school.