

Final Project Alpha Release

Basic Information

Project title: SBMAP

Description: With this comprehensive Small Body Map for the Average Person (SBMAP), I aim to produce a digestible, holistic representation of our solar system's many small bodies without sacrificing detail or accuracy.

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Github repository: <https://github.com/cpl-cs360/sbmap>

Website: <https://cpl-cs360.github.io/sbmap/>

Completed Project Components

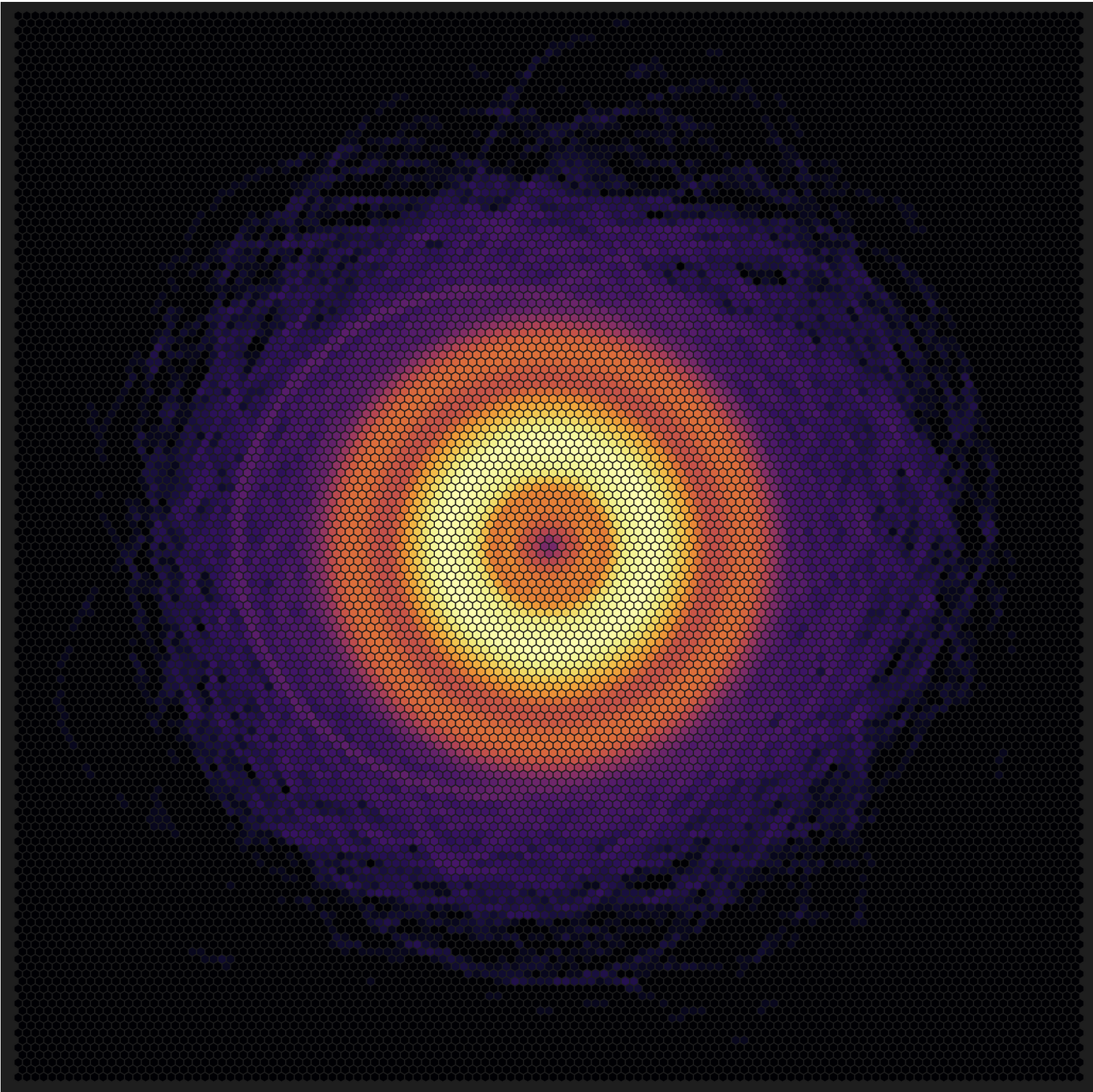
I have successfully implemented the data processing and visualization for the birds eye view hex map. This has taken by far the most amount of time because of the intense data processing needed. I have also completed the static violin plot for orbit distance. The scaffolding for the Asteroid Dashboard will make the next steps very easy to implement .

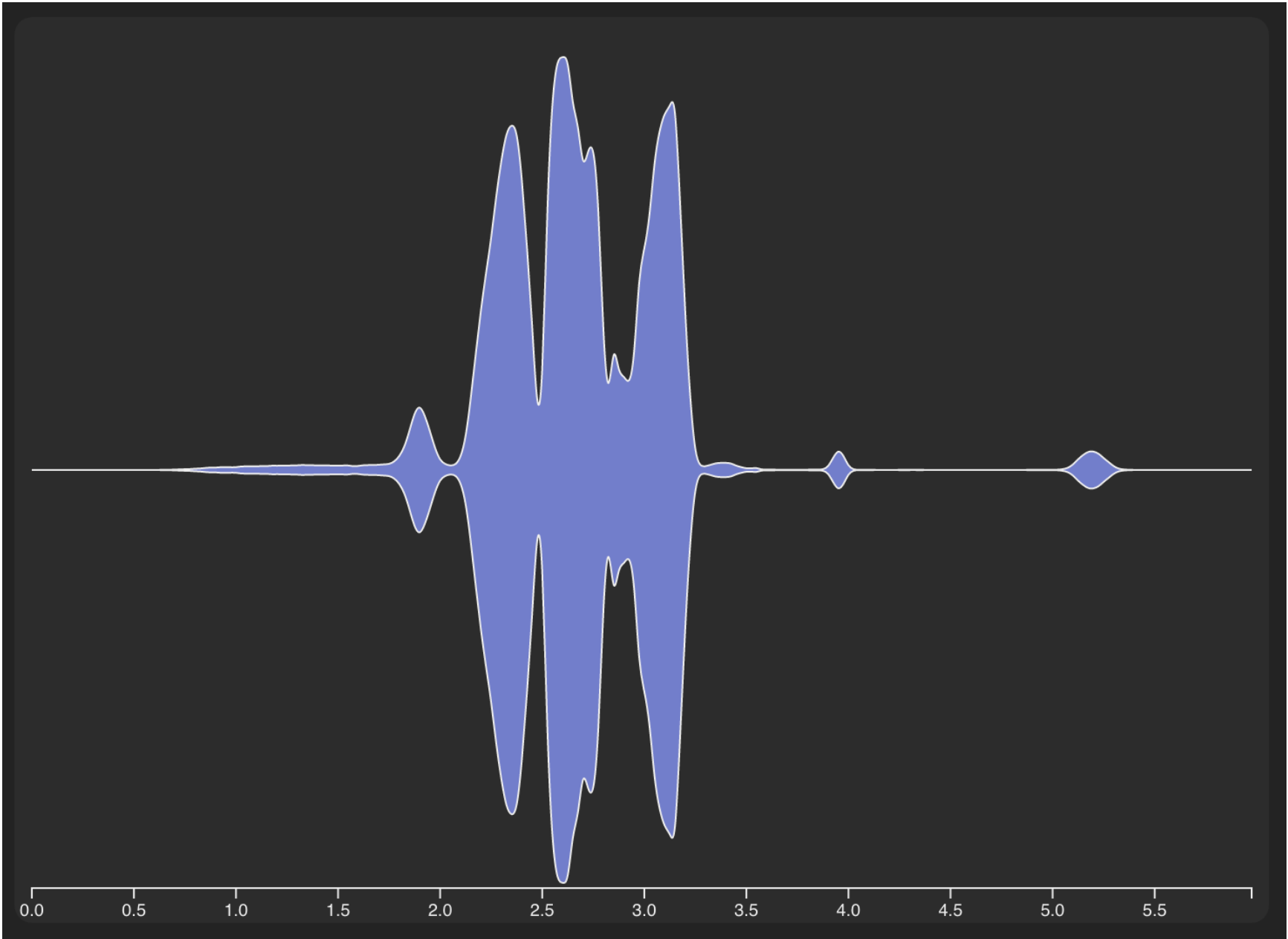
Data Processing

I have completed data processing with Python. Due to the intense runtime for calculating orbital ellipse for 1.2 million small bodies, the algorithm takes roughly 75 hours to complete synchronously. By implementing multiprocessing, I reduced the algorithm runtime by 92% (down to 6 hours). This opened up a reasonable door to making slight tweaks that was previously unrealistic due to runtime duration.

I have also done binning for the violin plot in Python.

Visualizations





Upcoming Milestones

The next immediate milestones include static visualizations for the Asteroid dashboard utilizing Kernel Density Estimation and interaction for the dashboard thereafter. Ensuring that these are extremely clean and fast is the main focus at the moment. Clean interaction will be easy to implement as long as I set myself up well during the static visualization phase.