

**EE/CprE/SE 491 WEEKLY REPORT 01**  
**9/3/2024 – 9/17/2024**

**Group number:** 20

**Project title:** POSYDON

**Client/Advisor:** TRAJCEVSKI, GOCE

**Team Members/Role:**

<b><u>NAME</u></b>		<b><u>ROLE</u></b>
BYRD, JAMES	–	Database Backend, Cyber Specialist
COLLINS, EAMON	–	Client Contact, Database Backend
NORRIS, ALEK	–	Database Backend, Cyber Specialist
POLSTON, ALEXANDER	–	Database Backend, Cyber Specialist
SNYDER, ANDREW	–	Database Backend, Cyber Specialist
VARNITSKY, SVYATOSLAV	–	GUI Specialist, Database Backend

- **Weekly Summary:** Because this is our first report, it covers two weeks—from September 3rd to September 17th. During this period, our group met in person to discuss basic etiquette and set expectations, which are reflected in the team contract we collaboratively wrote and signed. In the second week, we officially met with our advisor and client, Dr. Trajcevski, via a Zoom meeting. During this meeting, we reviewed the basic requirements for our design project, POSYDON. Dr. Trajcevski introduced himself, provided background on the product, and explained how he became involved in the project. He concluded the meeting by assigning us to conduct individual research on time series analysis and shared links to additional information we needed to understand before proceeding with the project.
- **Past week's accomplishments:** Given that time series analysis is a new area of study for many team members, Dr. Trajcevski requested that we first focus on conducting personal research in this field. Since this foundational knowledge is essential for all team members, it is currently the only task required of everyone.

**Task 1 (Due by September 18th):**

- *Review the presentation on time series provided by Dr. Trajcevski.*
- *Focus on understanding the concept of **distance functions** in time series analysis.*
- *Explore the **difference between a metric and a measure** in a function and why this distinction is critical in practice.*
- *Review the provided links for additional context and understanding.*
  - <https://posydon.org/>
  - [https://www.esa.int/Science\\_Exploration/Space\\_Science/Gaia](https://www.esa.int/Science_Exploration/Space_Science/Gaia)

- **Pending issues:** Not enough information has been given yet to start in on anything other than personal research, and understanding of the project by everyone. This has led to a little bit of a bottleneck for the group as far as getting work done, assigning roles, responsibilities, etc.
- **Individual contributions:**

<b><u>NAME</u></b>	<b><u>Individual Contributions</u></b>	<b><u>Hours this week</u></b>	<b><u>HOURS cumulative</u></b>
BYRD, JAMES	Conducted individual research on topics provided by Dr. Trajcevski, especially details of the existing tool developed by the Posydon project. Downloaded and examined an old dataset to determine the format and file types used.	5	5
COLLINS, EAMON	Contacted Dr. Trajcevski, Organized meeting times and locations, coordinated schedules, conducted research on background information.	5	5
NORRIS, ALEK	Assisted in creating the weekly report. Conducted independent research to gain a better understanding of the project in preparation for when official work begins.	5	5
POLSTON, ALEXANDER	Finalized Team contract document and submitted it. Assisted in organizing team efforts this week. Studied slides provided by Dr. Trajcevski.	5	5
SNYDER, ANDREW	Assisted in the creation of initial team documents, such as our team contract. Investigated the benefits and disadvantages of utilizing various database systems, including MySQL and PostgreSQL. Researched the existing Posydon Project and the European Space Agency's Gaia. Read through the information on the time series provided by Dr. Trajcevski.	5	5
VARNITSKY, SVYATOSLAV	Reserved room for weekly meetings. Studied time series slides provided by Dr. Trajcevski. Researched the Posydon project to evaluate existing work and determine considerations for future projects.	5	5

- Plans for the upcoming week

- *Meet with Client to discuss tools, existing databases, and our entry point into the project.*
- *Research former senior design projects, specifically design documents, and start mapping sections to our project (Definition of Problem, Requirements, Users, Testing)*
- *Discuss major components of our project and how they connect together*
- *Create an execution scenario (How the user will use our project and necessary components)*
- *Evaluate dataset*

- Summary of weekly advisor meeting

- 1. Time Series Data Handling:**

- We are working with multidimensional and multivariate time series data. This involves handling complex datasets with multiple variables.

- 2. POSYDON Project Overview:**

- Population Generation: Generating populations is outside the scope of our responsibilities.
- Distance Calculation Issues: There are challenges in generating distance measures that need to be addressed within the data.

- 3. Data Management and Workflow:**

- **Database Integration:**
  - After downloading, data needs to be transferred to a relational database, which is suitable for this task.
  - The data must be accessible through software we develop, either as a standalone version or as part of a web application.
  - For the standalone version, users will download the data, run scripts we provide, and install the database locally.
  - The web app will include a UI, allowing users to interact with the data more easily.
- Massive Data Scale: The dataset is enormous, exceeding terabytes in size. All data will be in a consistent format, making it easier to manage.

- 4. Project Development Strategy:**

- Start by building a standalone version of the application, where both the database server and relational server run on the same machine. This simplifies development and testing in the early stages.
- Eventually, the project will need to scale, allowing clients to handle significant amounts of data locally.