

# Nebula Net Interactive Feed

## Project Plan

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# Project Plan

## 1. Document Summary:

This document presents the comprehensive plan for the Computer Science 422 Software Methodologies Project 2 Nebula Net Interactive Feed (NNIF). This Document delineates the composition of the team, delineates their designated roles and deliverables, establishes meeting schedules, outlines the project timeline and deliverables, and provides the rationale for these determinations. This is the initial draft of this document to be submitted and refined based on constructive feedback from the instructor.

## 2. Organizational Makeup:

- 2.1.1. **Jacob Burke:** Test Automation/ Hosting/ Cloud Engineer
- 2.1.2. **Isabella Cortez:** Web Scraping and Data Output
- 2.1.3. **Freddy Lopez:** Front-End/ UI/ Web Developer
- 2.1.4. **Daniel Willard:** Project Manager
- 2.1.5. **Simon Zhao:** Backend /Integration Developer

## 3. Project Roles / Division of Tasks:

### 3.1 Test Automation Engineer:

Responsible for designing, implementing, and maintaining automated testing frameworks and scripts to validate software functionality. Collaborates with the development team to identify test cases, automate repetitive tasks, and ensure the

reliability and efficiency of testing processes. Conducts test execution, analyzes results, and reports any issues or defects to the development team for resolution.

### 3.2 Hosting/ Cloud Engineer:

Responsible for the configuration, deployment, and maintenance of web hosting and cloud infrastructure. Tasks include connection to existing servers and ensuring the availability and performance of hosted websites. Collaborates with development teams to troubleshoot hosting-related issues and optimize web server configurations for optimal performance and security. Implements best practices for web hosting management, including backup and presentation strategies.

### 3.3 Front-End/ UI/ Web Developer:

Responsible for creating visually appealing and user-friendly interfaces for web applications. Tasks include designing and implementing front-end components using HTML, CSS, and JavaScript frameworks, ensuring compatibility across various browsers and devices. Collaborates with designers and backend developers to integrate UI elements with backend systems, ensuring smooth functionality and optimal user experience. Implements responsive design principles to enhance usability and accessibility of web applications.

### 3.4 Project Manager:

Responsible for overseeing all aspects of the project, including planning, execution, and delivery. Tasks include defining project scope, defining roles, documentation creation, objectives, and timelines, and allocating resources. Coordinates with team members to assign tasks, monitor progress, and ensure adherence to project milestones and deadlines. Acts as the main point of contact for stakeholders, providing regular updates on project status and addressing any concerns or issues that arise. Facilitates communication and collaboration among team members, fostering a positive and productive working environment, and assignment of roles.

### 3.5 Backend /Integration Developer:

Responsible for establishing connections to existing databases and developing back-end systems to format and package data efficiently. Collaborates with other developers to establish APIs and access to back-end services, as well as facilitating the shipping of data.

## 4. Decision Guidelines:

The Project Manager referred to as Willard, is responsible for strategizing the project's overarching plan and delegating tasks among developers. Willard also

assumes the responsibility of finalizing and submitting documentation. Git/GitHub serves as the designated version control system, with Simon entrusted to oversee final merges from development branches to the main branch, subject to approval by the Project Manager.

## 5. Meeting Times / Location:

| Day              | Location  | Time        |
|------------------|---|-------------|
| <b>Sunday</b>    | Discord (online communication platform)         | 12:00-14:00 |
| <b>Monday</b>    | Knight Library, Eugene, Oregon (in person)      | 15:30-17:30 |
| <b>Tuesday</b>   | Knight Library, Eugene, Oregon (in person)      | 15:30-17:30 |
| <b>Wednesday</b> | Knight Library, Eugene, Oregon (in person)      | 15:30-17:30 |
| <b>Thursday</b>  | Allan Price Science Library, Eugene (in person) | 12:00-14:00 |
| <b>Friday</b>    |   |             |
| <b>Saturday</b>  |   |             |

## 6. Project Timeline / Deliverables:

| Task or Milestones                                   | Status   | Assignment | Due Date  | Confirmed Completion Date |
|--|----------|------------|-----------|---------------------------|
| <b>Week 0 (11FEB - 17FEB)<br/>Planning and Setup</b> |          |            |           |                           |
| Project Ideation                                     | Complete | Everyone   | 12FEB2024 | <b>12FEB2024</b>          |
| Setup Github repo                                    | Complete | Freddy     | 18FEB2024 | <b>15FEB2024</b>          |
| <b>Week 1 (18FEB - 24FEB)<br/>Prototyping</b>        |          |            |           |                           |
| Complete 3-page proposal                             | Complete | Willard    | 24FEB2024 | <b>19FEB2024</b>          |
| Web scraper  | Complete | Isabella   | 19FEB2024 | <b>19FEB2024</b>          |

|   |          |          |           |                  |
|---|----------|----------|-----------|------------------|
| Website Prototype   | Complete | Freddy   | 24FEB2024 | <b>19FEB2024</b> |
| Connection test to Database                                   | Complete | Simon    | 24FEB2024 | <b>19FEB2024</b> |
| Set up AWS/IXDev Web hosting                                  | Complete | Jacob    | 24FEB2024 | <b>18FEB2024</b> |
| <b>Week 2 (25FEB - 02MAR)<br/>Integration</b>                 |          |          |           |                  |
| SRS/SDS/Project Plan  | Complete | Willard  | 26FEB2024 | <b>26FEB2024</b> |
| Installation/Startup Scripts                                  | Complete | Jacob    | 02MAR2024 | <b>03MAR2024</b> |
| Data Packaging from the database                              | Complete | Simon    | 02MAR2024 | <b>01MAR2024</b> |
| Connection to Website   | Complete | Simon    | 02MAR2024 | <b>02MAR2024</b> |
| Web scraper data handoff to Web                               | Complete | Isabella | 02MAR2024 | <b>05MAR2024</b> |
| The web page layout is finished                               | Complete | Freddy   | 02MAR2024 | <b>25FEB2024</b> |
| Website Connection to data                                    | Complete | Freddy   | 02MAR2024 | <b>01MAR2024</b> |
| <b>Week 3 (03MAR - 09MAR)<br/>Testing/Debugging/Finalize</b>  |          |          |           |                  |
| Finalized and debug software                                  | Complete | Everyone | 08MAR2024 | <b>11MAR2024</b> |
| Refactored code for AWS Lambda                                | Complete | Jacob    | 08MAR2024 | <b>06MAR2024</b> |
| Adjust Install and Run Scripts                                | Complete | Jacob    | 08MAR2024 | <b>10MAR2024</b> |
| Testing User interface  | Complete | Jacob    | 08MAR2024 | <b>11MAR2024</b> |
| Carousel (Web & Mobile)                                       | Complete | Freddy   | 08MAR2024 | <b>10MAR2024</b> |
| <b>Week 4 (10MAR - 16MAR)<br/>Submission and Presentation</b> |          |          |           |                  |
| Finalized Documentation                                       | Complete | Willard  | 10MAR2024 | <b>11MAR2024</b> |
| Project Submission  | Complete | Willard  | 13MAR2024 | <b>12MAR2024</b> |

|                      |          |          |           |                  |
|----------------------|----------|----------|-----------|------------------|
| Project Presentation | Complete | Everyone | 12MAR2024 | <b>12MAR2024</b> |
|----------------------|----------|----------|-----------|------------------|

## 7. Monitoring/ Reporting Guidelines:

Reporting will be facilitated through a revision history log provided below, which will be consistently updated by team members during their project engagement. Each update will encompass a summary of completed tasks or encountered impediments. Project monitoring and progress assessment will be conducted during the Sunday meetings, where deliverables will be reviewed, and any outstanding issues will be promptly addressed after that.

| Date          | Author   | Description  |
|---------------|----------|--|
| <b>WEEK 0</b> |          |  |
| 12FEB         | Everyone | Everyone Completed project ideation and NNIF was chosen for Development                |
| 15FEB         | Willard  | Project documents set up and shared: SDS/ project plan, Programmer note, meeting notes |
| 15FEB         | Simon    | GitHub repository Established for version control                                      |
| 15FEB         | Simon    | Created rough Draft SRS  |
| 15FEB         | Jacob    | Created Web hosting instructions   |
| 15FEB         | Freddy   | Web Page Design Mockup on Fuma.  |
| <b>WEEK 1</b> |          |  |
| 18FEB         | Jacob    | Set up Amazon Web Services and hosted the initial Static Website                       |
| 19FEB         | Isabella | JWST Data Web Scraper  |
| 19FEB         | Willard  | 3-page proposal submitted after review   |
| 19FEB         | Freddy   | Web page Prototype built   |
| 19FEB         | Simon    | Connection to NASA database tested and connection confirmed (sign up for token)        |
| <b>WEEK 2</b> |          |  |
| 25FEB         | Freddy   | Finished React Home and About Page   |
| 26FEB         | Simon    | Implemented FITS processing class  |

|               |          |  |
|---------------|----------|--|
| 27FEB         | Jacob    | Adjusted AWS site by adding SSL Cert and switching to CloudFront   |
| 27FEB         | Isabella | Web Scraper + Database Creator Implementation  |
| 28FEB         | Simon    | Added functionality to filter FITs files based on certain instrument type and target name.   |
| 29FEB         | Willard  | Lined up and Interview with an Artist and a photographer   |
| 01MAR         | Simon    | Implemented fetching for FITS URIs for a particular observation and found a way to access FITS file header data by streaming onto memory.                    |
| <b>WEEK 3</b> |          |  |
| 02MAR         | Freddy   | Completed constructing skeleton Telescope and Sources page   |
| 02MAR         | Simon    | Added function to convert processed FITs data from stream to PNG and save into directory.  |
| 03MAR         | Simon    | Included various FITs data scaling methods (linear, root, asinh, sqrt, and histogram equalization scaling) to further processing.                            |
| 03MAR         | Jacob    | Created a rough draft installation script and identified all package dependencies needed   |
| 05MAR         | Simon    | Automated process of fetching FITs files for every observation of each week.   |
| 05MAR         | Willard  | Created Presentation document and revised current docs   |
| 05MAR         | Isabella | Web Scraped Information Written to TXT File and TXT File information converted to JSON Format  |
| 06MAR         | Jacob    | Adjusted web scraping scripts to run on AWS Lambda and directly read/write to S3   |
| 07MaR         | Freddy   | Completed Current Sources page and Prototype Telescope model interactive page  |
| 07MAR         | Simon    | Implemented helper functions to automatically select the best FITs file based on a certain criteria (e.g, calibration level, pipeline stages, and file size. |
| 08MAR         | Simon    | Added functionality for saving observation metadata to a json file.  |
| 09MAR         | Freddy   | Added sources used by each Backend Module  |
| 09MAR         | Freddy   | Completed mobile view and formatting issues associated with text,  |

|               |         |  |
|---------------|---------|--|
|               |         | images, and carousel.  |
| <b>WEEK 4</b> |         |  |
| 10MAR         | Freddy  | Completed image carousel displaying processed png photos and their corresponding metaData. |
| 10MAR         | Freddy  | Created moveJSON.py to move metadata in fetch_process to nebula/src/testJSON.js            |
| 11MAR         | Jacob   | Tested install/run script on ix-dev and fixed small bugs that appeared                     |
| 11MAR         | Simon   | Main.py file reads MAST authentication token from token.txt file.                          |
| 11MAR         | Simon   | Redirected the PNG directory to the frontend directory and adjusted code to that path.     |
| 11MAR         | Willard | Finalized Project documentation for review   |
| 13MAR         | Jacob   | Updated run script and install documentation to work with React/NodeJS                     |

## 8. Rationale Behind Timeline/ Project Taskings:

In order to foster effective collaboration and ensure progress within the group, responsibilities have been distributed among team members with specific roles and titles tailored to their respective backgrounds and desired learning objectives for their capstone project. These roles were carefully allocated based on individual expertise and interests, with project taskings delineated according to the expected deliverables associated with each role's responsibilities.

To facilitate seamless collaboration, various communication tools have been selected for team interaction. While team members are expected to engage in ongoing collaboration throughout the project duration to ensure the integration of all system components, multiple meeting times have been established during the week to address any obstacles or concerns. A Discord server has been established as the primary platform for project meetings and communication, enabling remote gatherings via conference calls and screen sharing. Additionally, Discord facilitates continuous collaboration through designated server rooms for text-based discussions, accessible at any time. While project documents can also be shared via Discord, the primary tool for document collaboration remains to be Google Docs, for real-time editing and collaboration features.

The project timeline has been structured to provide each team member with sufficient time to accomplish weekly objectives. Sunday meetings, in particular, are



dedicated to reviewing deliverables and addressing any significant challenges, allowing for subsequent resolution of outstanding issues or adjustments to the project plan, if necessary. With the proposed project timeline outlining tasks, completion is anticipated by March 8, with an additional three-day buffer for flexibility in resolving any lingering issues.

## 9. Meeting Notes and Discussion

- For clarity meeting notes continued in separate documents. The two meeting notes documents that will be labeled as the following:
- Meeting\_Notes\_NNIF (overview notes by the project manager)
- CS\_422\_Project\_2\_Meeting\_Notes (Simon Zhao personal notes)