

Progress Report: Sprint 1

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Executive Summary

The Optimizing Research Software Codes project improves the performance of RINEX2DB, a GNSS data tool which converts RINEX observation/navigation data into .CSV outputs. Our team aims to refactor this codebase to reduce runtime while maintaining accuracy.


- Repository Setup: Inherited and verified the existing RINEX2DB Python project (python rinex.py → compactdb.csv).
- Communication: Discord and in-person meetings. Weekly Partner and TA meetings via Zoom/Discord.
- [Project Board - Trello](#): Live with 8 backlog tasks, including code analysis, algorithm review, and validation testing.
- Repo Summary
 - We have confirmed access and permissions to collaborate on the repository. Python, no frameworks, default main branch, no tests yet.
 - Next steps: Analyze the code and create initial validation tests.

Communication

Channels	Usage	Owner(s)	Response Times	Recurring Meetings
Discord	Primary async channel, progress report with TA	All team members	< 4 hours during the weekdays	Thursdays 11:00-11:30am
GitHub Issues/Pull Requests	Pull requests and code review	All team members	< 4 hours during the weekdays	Reviewed during team meetings
Zoom	Progress summaries with Project Partner	All team members	N/A	Thursdays 10:00-11:00am
Email	Formal communication and professor questions	All team members	< 4 hours during the weekday	N/A

Repo Snapshot

Project Repository



optimizing-research-software-codes

Private

Watch

main


1 Branch

0 Tags

Go to file

Add file

Code










KathrynJButler

Update README.md

06e48c8 · 1 minute ago

5 Commits

 Datasets/COVL_1sec	Added Datasets	26 minutes ago
 doc	Added Provided files	21 minutes ago
 gnss_python-main	Added Provided files	21 minutes ago
 .gitignore	Create .gitignore	17 minutes ago
 README.md	Update README.md	1 minute ago
 Welcome to the 2025-26 CS Capstone!.pdf	Added Provided files	21 minutes ago
 assignments.xlsx	Added Provided files	21 minutes ago

README.md

Optimizing Research Software Codes Project

The Optimizing Research Software Codes project aims to improve the performance of an existing research tool used for Global Navigation Satellite System (GNSS) data analysis.

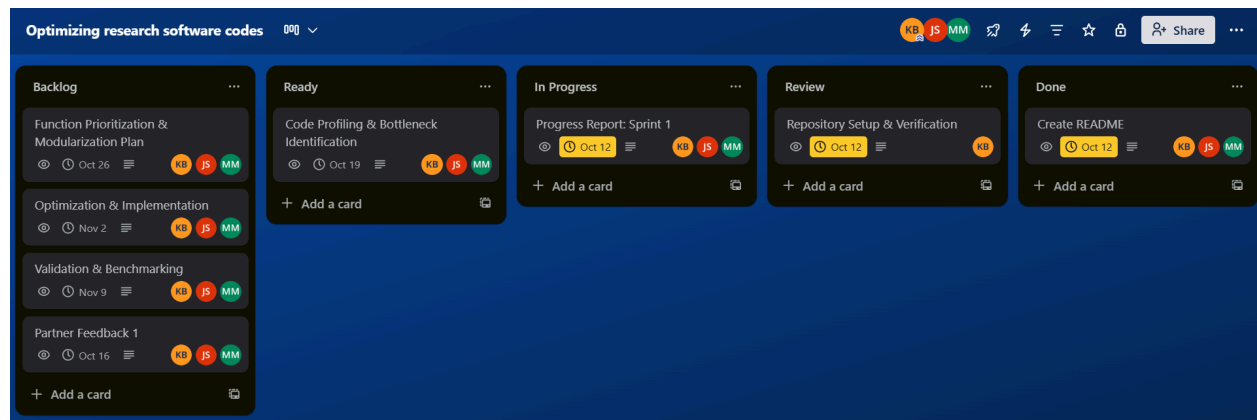
Team Roster & Contacts

Name	Role	Contact
Kathryn Butler	Team Member	butlekat@oregonstate.edu
Michael Mcallister	Team Member	mcallmic@oregonstate.edu
Joseph Schaab	Team Member	schaabj@oregonstate.edu
Dr. Jihye Park	Project Partner	Jihye.Park@oregonstate.edu
Birat Thapa	TA	thapabi@oregonstate.edu

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PM Rails Snapshot

<https://trello.com/invite/b/68e9470f2d50da1ae95b40f5/ATTIdf712df149b1e8a34ccdd4cbce952aco2AF3DEF8/optimizing-research-software-codes>



Inherited Project Run Verification

Name	Description
Datasets/COVL_1sec	Directory of sample input datasets.
doc	Documentation directory. This includes project description, program usage and program installation manuals.
gnss_python-main	Main program directory. The main program Python file is rnx2db.py. Supporting Python files and input/output directories used by rnx2db.py are included in this directory.
.gitignore	The template Python .gitignore file.
README.md	The README file, containing information about the project and our team roles.
Welcome to the 2025-26 CS Capstone!.pdf	CS Capstone introductory pdf document.
assignments.xlsx	Assignment spreadsheet. This includes assignment titles and their respective due dates.

Our inherited project has difficulties running due to the necessity of adding additional libraries. This is currently being investigated to discover the correct libraries to add.

Our team got the project to run and output the desired CSV file after resolving many dependency issues, but there are still some recurring issues with the project retaining

The screenshot shows a VS Code editor with a file explorer on the left and a terminal at the bottom. The file explorer shows a project named 'optimizing-research-software-codes' with files like 'README.md', 'utils.py', and 'gns_python-main'. The 'utils.py' file is open in the editor, showing a Python script that defines a 'spread' function. The function takes parameters 'y, yy, n, x, m, nden' and returns a list of values. The terminal shows the execution of 'utils.py' and the output of the 'spread' function.

```

1 import math
2 import pandas as pd
3 import numpy as np
4
5 from scipy.signal import lombscargle
6
7
8 def spread(y, yy, n, x, m, nden):
9     """ converted spread function from MATLAB """
10    if x == np.round(x):
11        x = int(x)
12        yy[x - 1] = yy[x - 1] + y
13    else:
14        ilo = int(np.min([max(np.floor(x - 0.5 * m + 1), 1), n - m + 1]))
15        ihi = int(ilo + m - 1)
16        fac = (x - ilo) * np.prod([x - i for i in range(ilo + 1, ihi + 1)])
17        yy[ihi - 1] = yy[ihi - 1] + y * fac / (nden * (x - ihi))
18        for j in range(ihi - 1, ilo - 1, -1):
19            nden = (nden / (j + 1 - ilo)) * (j - ihi)
20            vufi - 1] = vufi - 1] + v * fac / (nden * (x - i))

```

The terminal shows the execution of 'utils.py' and the output of the 'spread' function:

```

File "C:\Users\lmc1\AppData\Local\Programs\Python\Python313\Lib\subprocess.py", line 1036, in _init_
self._execute_child(args, executable, preexec_fn, close_fds,
~~~~~
pass_fds, cwd, env,
~~~~~
...<5 lines>...
gid, gids, uid, umask,
~~~~~
start_new_session, process_group)
~~~~~
File "C:\Users\lmc1\AppData\Local\Programs\Python\Python313\Lib\subprocess.py", line 1548, in _execute_child
hp, ht, pid, tid = _winapi.CreateProcess(executable, args,
~~~~~
# no special security
~~~~~
...<4 lines>...
cwd,
~~~
startupinfo)
~~~~~
FileNotFoundError: [WinError 2] The system cannot find the file specified
PS C:\Users\lmc1\OneDrive - Oregon State University\Software 361\optimizing-research-software-codes>

```

[illegible]