

AI-Driven Detection and Mitigation of Urban Heat Island Effects Using Vision-Language Models

Project ID: R25-002

Logbook

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Software Engineering

Department of Software Engineering

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October 2025

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DECLARATION

I hereby confirm that this document is entirely my own work and does not include, without proper acknowledgment, any content that has been previously submitted for a degree or diploma at any other university or institution of higher education. To the best of my knowledge, it contains no material previously published or written by another individual, except where appropriately cited within the text.

Name	Student ID	Signature
Madhuwantha G K O	IT21802058	

The above candidates are carrying out research for the undergraduate Dissertation under my supervision.



Signature of the Supervisor

31/10/2025

Date

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1. Work Progress

Week	Progress
November– 2024	
Week 1	<ul style="list-style-type: none"> • Began brainstorming possible research areas. • Discussed ideas such as coral-reef protection, IoT-based deforestation detection, and travel-planning systems. • Focused on identifying a project with both innovation and social impact.
Week 2	<ul style="list-style-type: none"> • Continued reviewing different domains and evaluating feasibility. • Compared environmental, social, and technical relevance of shortlisted topics. • Supervisor guided us to align ideas with sustainability and real-world application areas.
Week 3	<ul style="list-style-type: none"> • Shifted focus toward urban heating problems and the Urban Heat Island (UHI) effect. • Supervisor mentioned a colleague from University of Lincoln (UK) researching this field. • Learned how AI + IoT + Digital twin simulation can help analyze and mitigate heat retention in cities.
Week 4	<ul style="list-style-type: none"> • Finalized UHI detection and mitigation as our main research topic. • Supervisor proposed collaborating with his Lincoln colleague as external supervisor and Ms. Kaushalya Rajapakse as co-supervisor. • Outlined research objectives and drafted the initial problem statement. • Prepared early documentation for proposal submission.
December – 2024	
Week 1	<ul style="list-style-type: none"> • Began preparing the TAF (Topic Assessment Form) document. • Collected background details, objectives, and expected outcomes for inclusion.
Week 2	<ul style="list-style-type: none"> • Held a meeting to plan our research schedule. • We decided to meet with supervisors every other week starting from January 2025 for progress reviews. • Began early reading on AI-based environmental analysis to prepare for proposal writing.
January – 2025	

Week 1	<ul style="list-style-type: none"> Started creating Charter and proposal. Met with the supervisor and co supervisor to obtain the signature for the charter document.
Week 2	<ul style="list-style-type: none"> Completed creating the proposal presentation
Week 3	<ul style="list-style-type: none"> Had our physical meeting to present the proposal presentation as trial run
Week 4	<ul style="list-style-type: none"> We did the proposal presentation. Submitted proposal report (final) to the CDAP cloud
February	
Week 1	<ul style="list-style-type: none"> Conducted a group meeting to discuss the proposal result. With a team meeting discussed how to begin the development.
Week 2	<ul style="list-style-type: none"> I gathered information on how I can develop my system and faced some difficulties.
Week 3	<ul style="list-style-type: none"> Discussed the issues with supervisors and identified solutions together
Week 4	<ul style="list-style-type: none"> Conducted preliminary research on Urban Heat Island (UHI) phenomena and existing simulation approaches such as ENVI-met, EnergyPlus, and MATLAB Simscape. Explored thermal simulation frameworks and tools. Studied thermal properties of building materials (concrete, glass, tile, insulation). Started preparing metadata parameters like density, specific heat capacity, and thermal conductivity.
March	
Week 1	<ul style="list-style-type: none"> Showed my findings to supervisors.
Week 2	<ul style="list-style-type: none"> Began designing simulation data flow.
Week 3	<ul style="list-style-type: none"> Showed my progress and get feedback on how to improve the design and make the process better
Week 4	<ul style="list-style-type: none"> Defined system architecture for simulation component. Continue developing the designing.
April	
Week 1	<ul style="list-style-type: none"> Prepared PowerPoint slides for Progress Presentation 1.
Week 2	<ul style="list-style-type: none"> Did the progress presentation 1.
Week 3	<ul style="list-style-type: none"> Conducted a group meeting to discuss the progress presentation result.
Week 4	<ul style="list-style-type: none"> Integrated GIS data and 3D building model export pipeline from Blender. Tested data format compatibility for MATLAB input (CSV).

May	
Week 1	<ul style="list-style-type: none"> Began using MATLAB Simulink with Simscape Thermal to design prototype building thermal model.
Week 2	<ul style="list-style-type: none"> Discussed with supervisor about the thermal model issues and contact engineering student was suggested. Participated in a “How to Write a Research Paper” discussion.
Week 3	<ul style="list-style-type: none"> Started frontend design and Configured heat transfer components, temperature sensors, and ambient conditions (temperature, wind).
Week 4	<ul style="list-style-type: none"> Developed Node.js backend pipeline to connect the React frontend with MATLAB engine. Configured CSV generation and file transfer via REST API.
June	
Week 1	<ul style="list-style-type: none"> Continued the updates in design and development of the web app frontend.
Week 2	<ul style="list-style-type: none"> Implemented React + Three.js 3D visualization tool for model viewing and metadata assignment.
Week 3	<ul style="list-style-type: none"> Added Transform Controls for moving and rotating models interactively.
Week 4	<ul style="list-style-type: none"> Added SunCalc.js integration to calculate sunlight exposure based on latitude, longitude, and time.
July	
Week 1	<ul style="list-style-type: none"> Displayed exposure using heatmap overlay on 3D models. Designed simulation data export to CSV including parameters: Thickness, Density, Thermal Conductivity, Specific Heat Capacity, Sun Exposure, Temperature, Humidity, and Wind Speed.
Week 2	<ul style="list-style-type: none"> Began writing our research paper. Reviewed existing research papers related to our component to support the writing of our research paper
Week 3	<ul style="list-style-type: none"> Sent our written research paper to the supervisor for checking.
Week 4	<ul style="list-style-type: none"> Revised the research paper based on the supervisor’s feedback.
August	
Week 1	<ul style="list-style-type: none"> The supervisor confirmed our research paper for submission to the ICAC conference.
Week 2	<ul style="list-style-type: none"> Started writing the individual final report. Submitted our research paper to the ICAC conference.
Week 3	<ul style="list-style-type: none"> Had a team meeting and discussed the PP2 and individual components. Organized a team meeting to plan the final report.

Week 4	<ul style="list-style-type: none"> Met with the supervisor to obtain the signature for the final report. Completed individual final report and submitted to the CDAP. Final report was sent for proofreading.
September	
Week 1	<ul style="list-style-type: none"> Had a team meeting and discussed the PP2 Built MATLAB simulation model to calculate temperature variation using metadata and dynamic weather parameters. Started creating the PP2 slides.
Week 2	<ul style="list-style-type: none"> Checked that 90% of the HeatScape app is working correctly. Presented the 90% progress to the panel at PP2
Week 3	<ul style="list-style-type: none"> Shared the panel comments with the supervisors Demonstrated how the simulation worked to the supervisors Continued some integration work between the frontend and backend.
Week 4	<ul style="list-style-type: none"> Started creating the project website. Looked into deployment strategies for the models
October	
Week 1	<ul style="list-style-type: none"> Did validation testing around the campus Added PDF report generation with exposure maps and recommendations to web application.
Week 2	<ul style="list-style-type: none"> A research paper status mail was received from ICAC. Attending research discussion.
Week 3	<ul style="list-style-type: none"> Deployed system to AWS. Prepared final presentation Created UI/UX Demo video Applied to WSA Competition
Week 4	<ul style="list-style-type: none"> Presented the final presentation

2. Supervisor Meeting Logs

Date	Platform / Location	Remarks
Nov 21, 2024 (Thu)	Microsoft Teams	Initial meeting after topic selection; discussed TAF preparation and upcoming proposal schedule.
Dec 5, 2024 (Thu)	Microsoft Teams	Reviewed draft TAF; supervisor feedback on objectives and feasibility.
Dec 18, 2024 (Wed)	Microsoft Teams	Progress check on proposal drafting; clarified scope of components.

Dec 19, 2024 (Thu)	Microsoft Teams	Finalized TAF submission and confirmed biweekly meetings from January.
Jan 2, 2025 (Thu)	Microsoft Teams	Discussed proposal structure and responsibilities for Charter document.
Jan 9, 2025 (Thu)	6th Floor, Main Building	Signed Charter; supervisor advised improvements for proposal presentation.
Jan 16, 2025 (Thu)	Microsoft Teams	Reviewed draft proposal slides; minor adjustments recommended.
Jan 23, 2025 (Thu)	6th Floor, Main Building	Trial run of proposal presentation; feedback on flow and clarity.
Jan 30, 2025 (Thu)	Microsoft Teams	Proposal preparation review; confirmed submission readiness.
Feb 6, 2025 (Thu)	6th Floor, Main Building	Discussed proposal results; planned system development schedule.
Feb 13, 2025 (Thu)	Microsoft Teams	Discussed Blender integration and metadata mapping for building models.
Feb 20, 2025 (Thu)	6th Floor, Main Building	Demonstrated early Simulink thermal model. Supervisor recommended using thermal resistance and moist air properties.
Feb 27, 2025 (Thu)	Microsoft Teams	Reviewed MATLAB-React communication pipeline concept.
Mar 6, 2025 (Thu)	6th Floor, Main Building	Progress on React 3D viewer. Supervisor requested adding sunlight exposure simulation.
Mar 13, 2025 (Thu)	Microsoft Teams	Discussed initial prototype issues; planned next testing cycle.
Mar 20, 2025 (Thu)	6th Floor, Main Building	Supervisor reviewed exposure results and advised validation tests; improvement feedback.
Mar 27, 2025 (Thu)	Microsoft Teams	Prepared for Progress Presentation 1; checked slide content.
Apr 3, 2025 (Thu)	6th Floor, Main Building	Conducted mock PP1; feedback on presentation structure.
Apr 10, 2025 (Thu)	Microsoft Teams	Discussed PP1 results and suggested improvement areas.
Apr 17, 2025 (Thu)	6th Floor, Main Building	Planned model upgrades for more accurate results.
Apr 24, 2025 (Thu)	Microsoft Teams	Introduced matlab simscape model from external supervisor for thermal simulation.
May 1, 2025 (Thu)	6th Floor, Main Building	Began using MATLAB Simulink with Simscape Thermal to design prototype building thermal model.
May 8, 2025 (Thu)	Microsoft Teams	Reviewed 3D model design.
May 15, 2025 (Thu)	6th Floor, Main Building	Supervisor checked progress of frontend development.
May 22, 2025 (Thu)	Microsoft Teams	Discussed integration of backend model with frontend.
May 29, 2025 (Thu)	6th Floor, Main Building	Finalized csv generation format for simulation.
Jun 5, 2025 (Thu)	Microsoft Teams	Supervisor reviewed backend and simulation model.
Jun 12, 2025 (Thu)	6th Floor, Main Building	Discussed research paper draft and experiment validation.
Jun 19, 2025 (Thu)	Microsoft Teams	Feedback on paper structure and data representation.
Jun 26, 2025 (Thu)	6th Floor, Main Building	Reviewed experiment results; finalized paper content.
Jul 10, 2025 (Thu)	6th Floor, Main Building	Supervisor checked final draft before submission.
Jul 24, 2025 (Thu)	6th Floor, Main Building	Reviewed ICAC submission and progress on final report.
Aug 7, 2025 (Thu)	6th Floor, Main Building	Feedback on final report writing and PP2 preparation.
Aug 21, 2025 (Thu)	6th Floor, Main Building	Reviewed final submission; confirmed proofreading stage.
Aug 21, 2025 (Thu)	Microsoft Teams	Final sync-up before submission; confirmed deadlines.
Sep 4, 2025 (Thu)	Microsoft Teams	Discussed PP2 presentation slides and algorithm demonstration.
Sep 4, 2025 (Thu)	6th Floor, Main Building	Conducted PP2 dry run and gathered feedback.
Sep 18, 2025 (Thu)	Microsoft Teams	Reviewed panel feedback and integration progress.

Oct 16, 2025 (Thu)	Microsoft Teams	Reviewed integrated system. Supervisor suggested adding report generation and user-friendly visualization. Final presentation review; validation testing and WSA submission updates.
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3. Meeting Notes

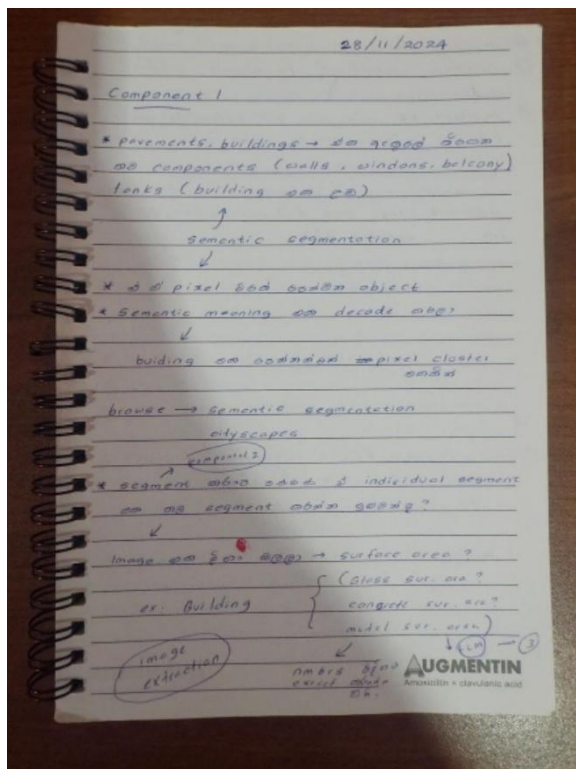


Figure 1: Note 1

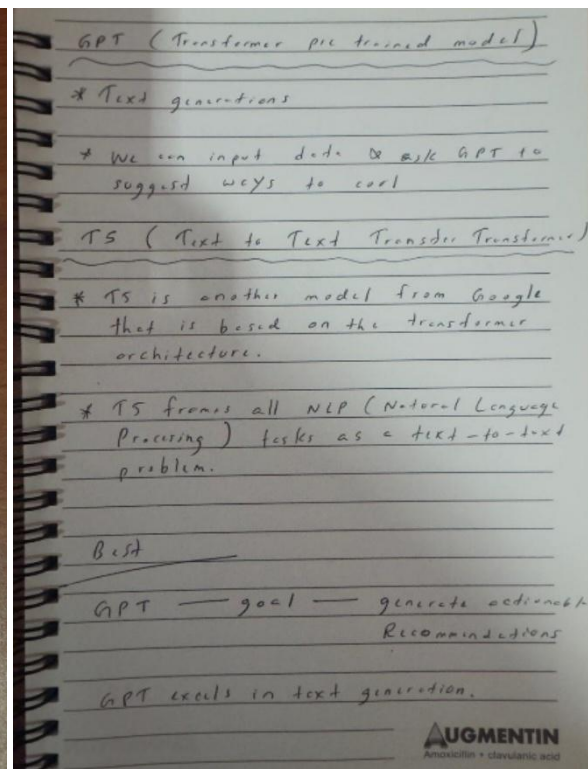


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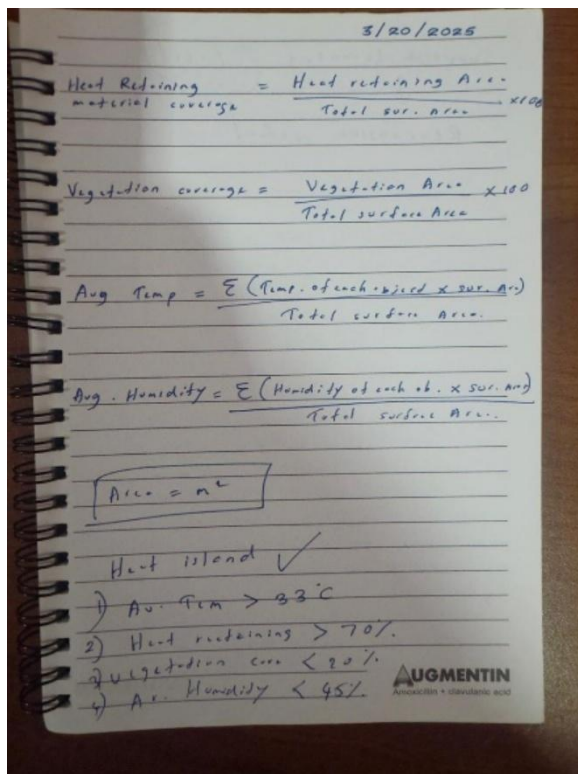


Figure 3: Note 3

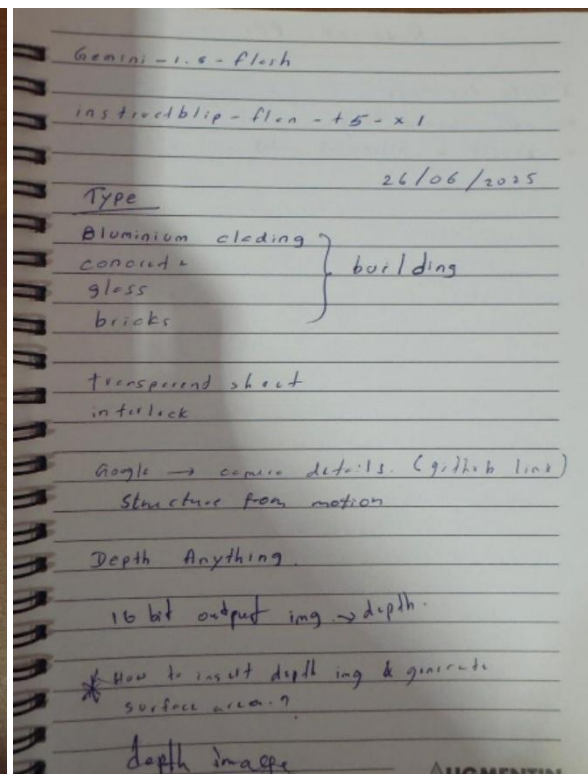


Figure 4: Note 4

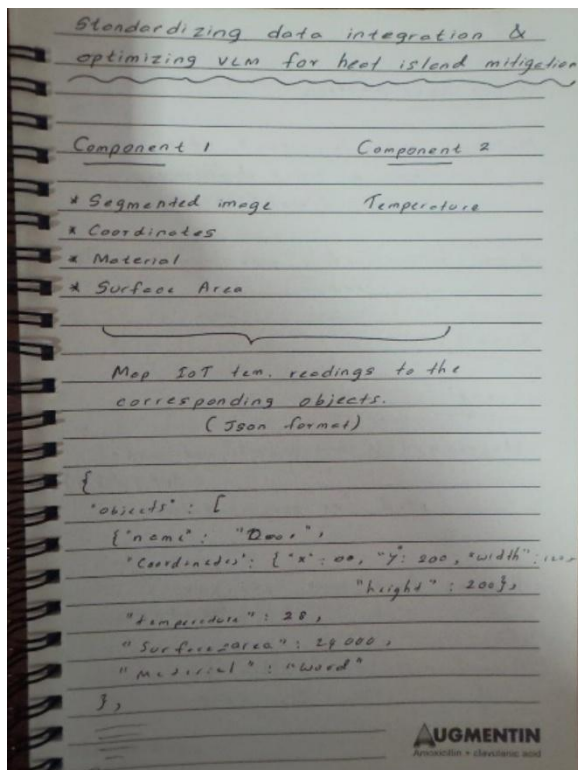


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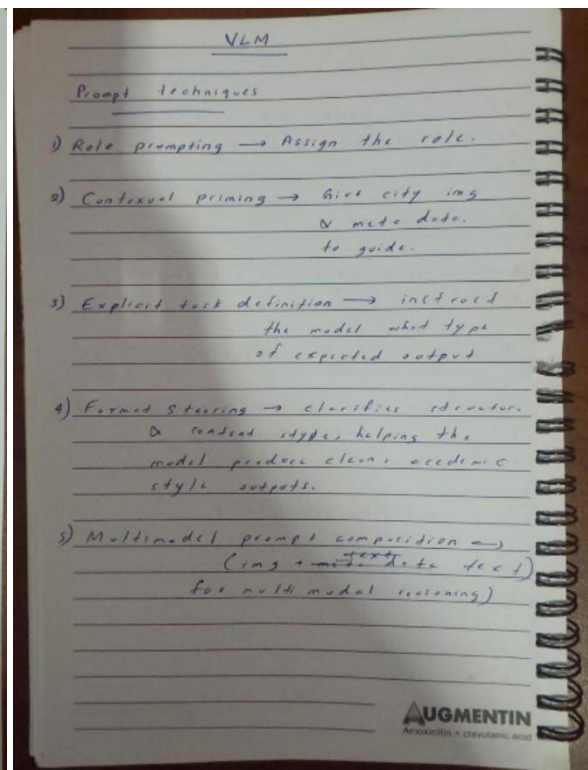


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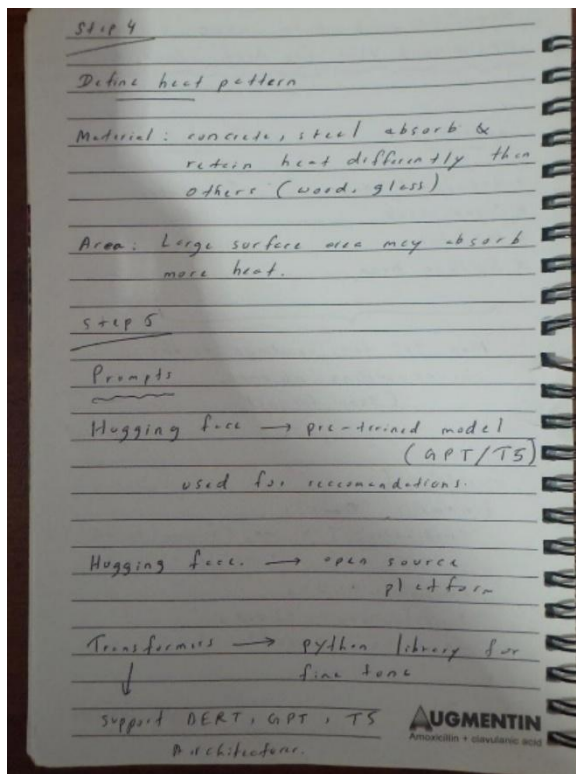


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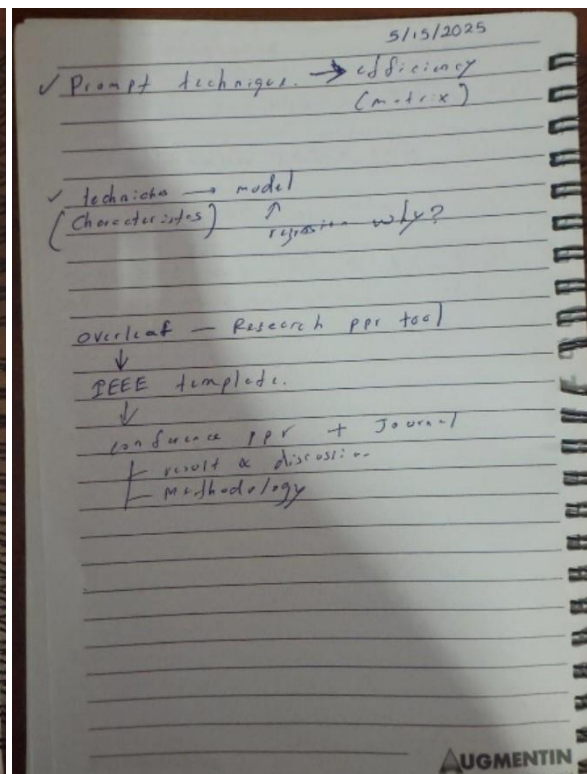


Figure 8: Note 8

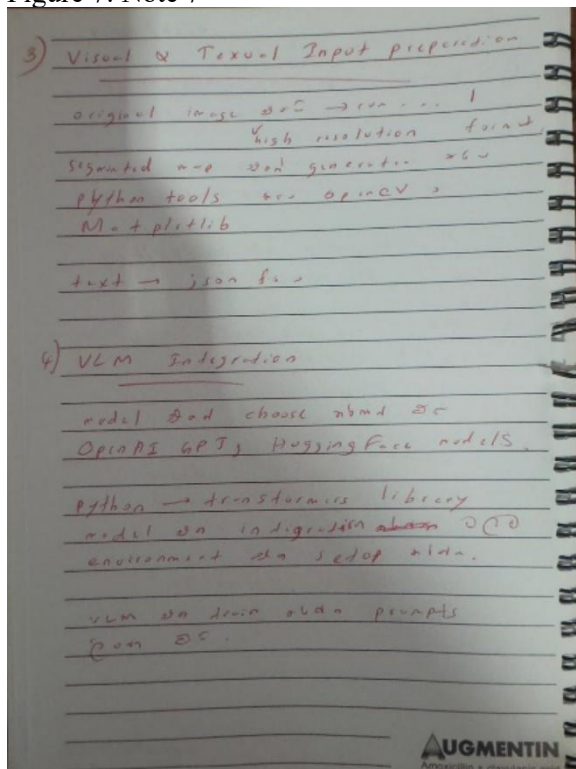


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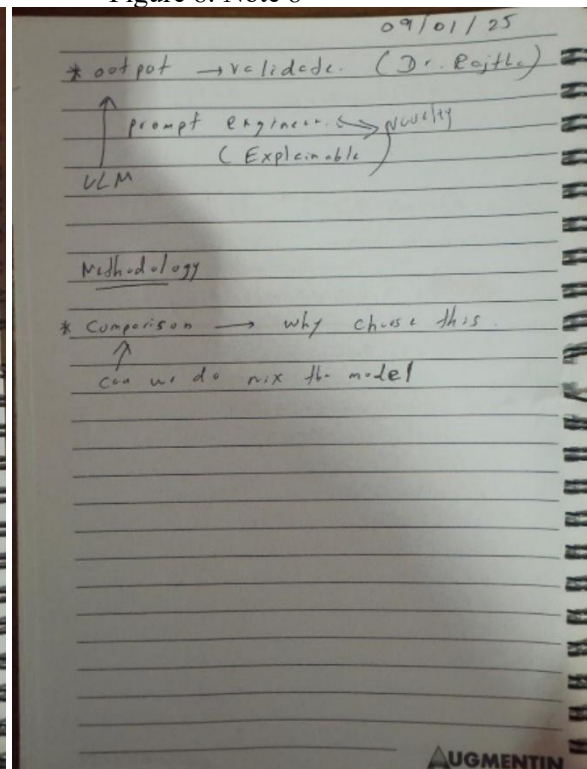


Figure 10: Note 10

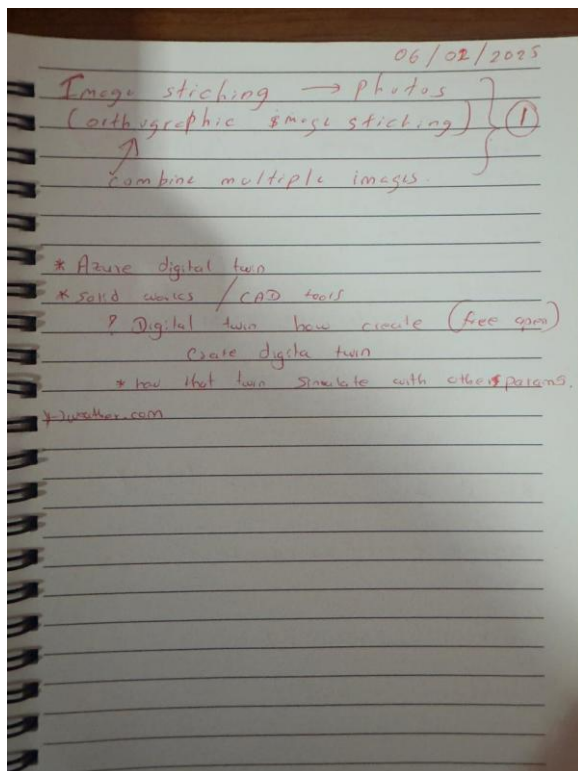


Figure 11: Note 11

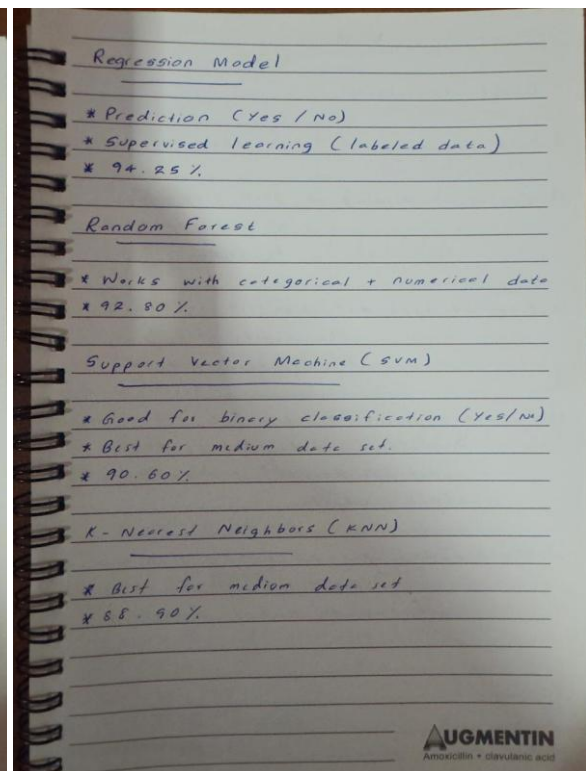


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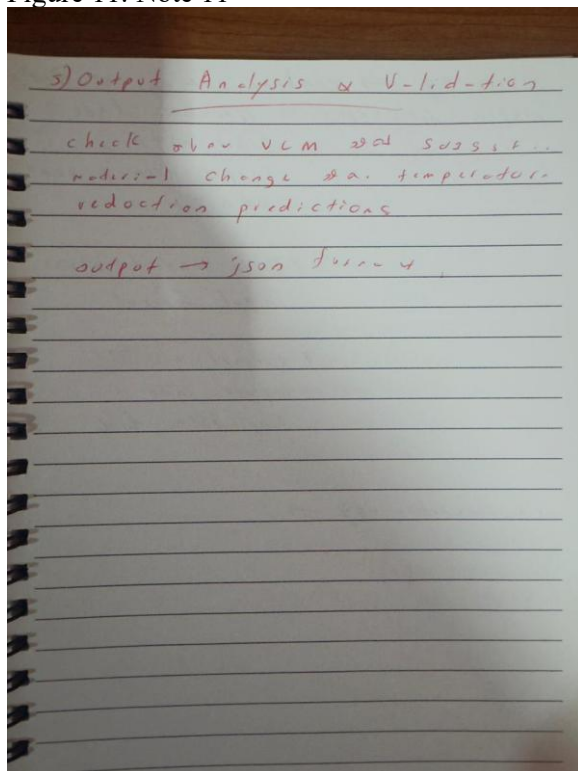


Figure 13: Note 13

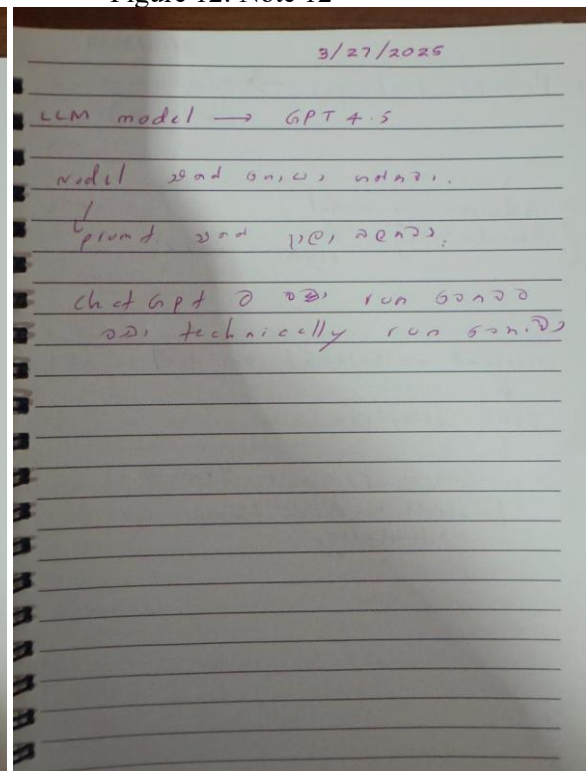


Figure 14: Note 14

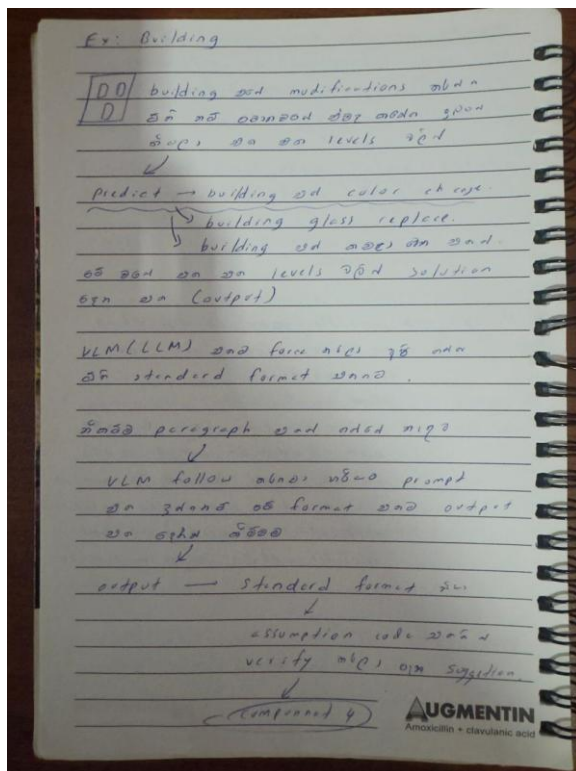


Figure 15: Note 15

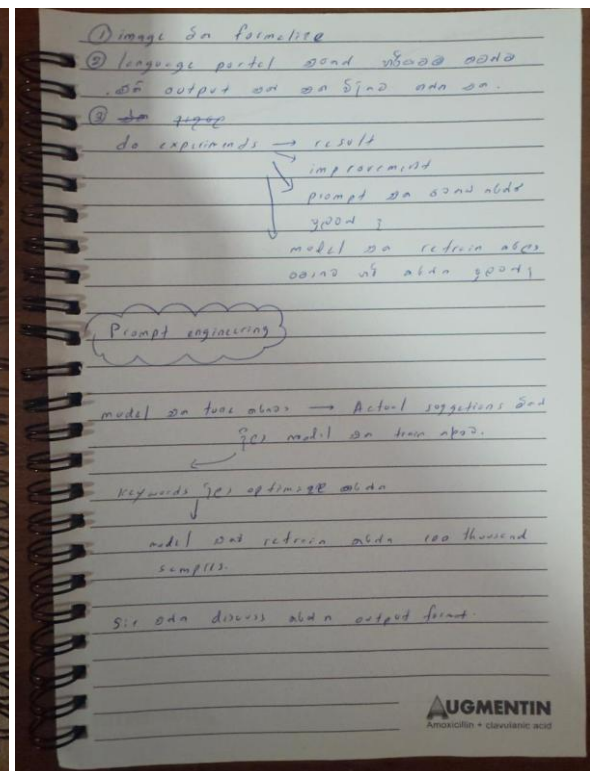


Figure 16: Note 16

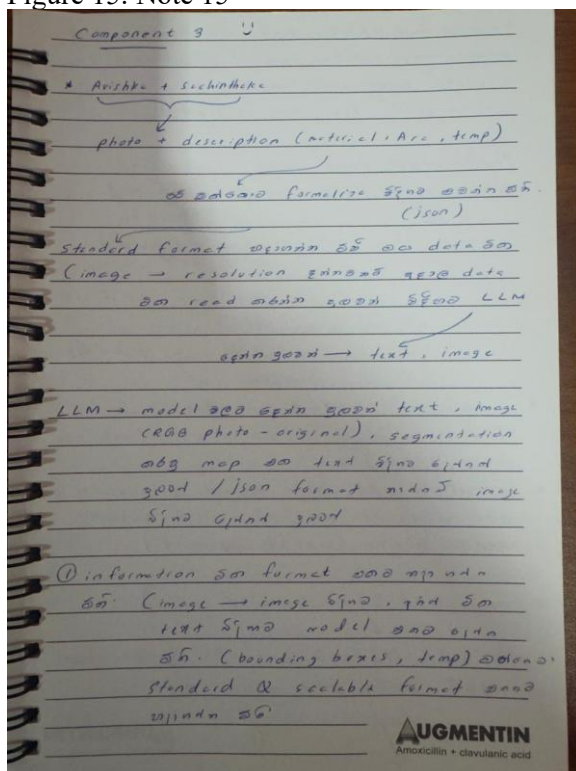


Figure 17: Note 17

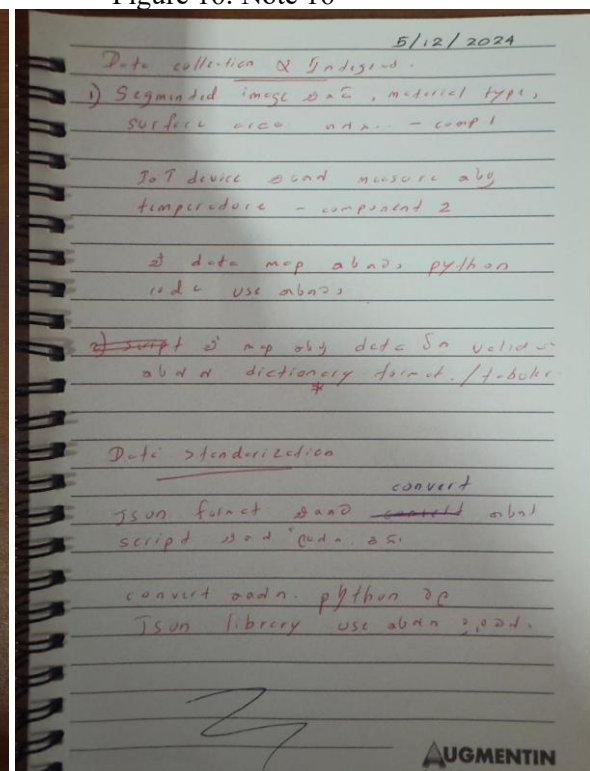
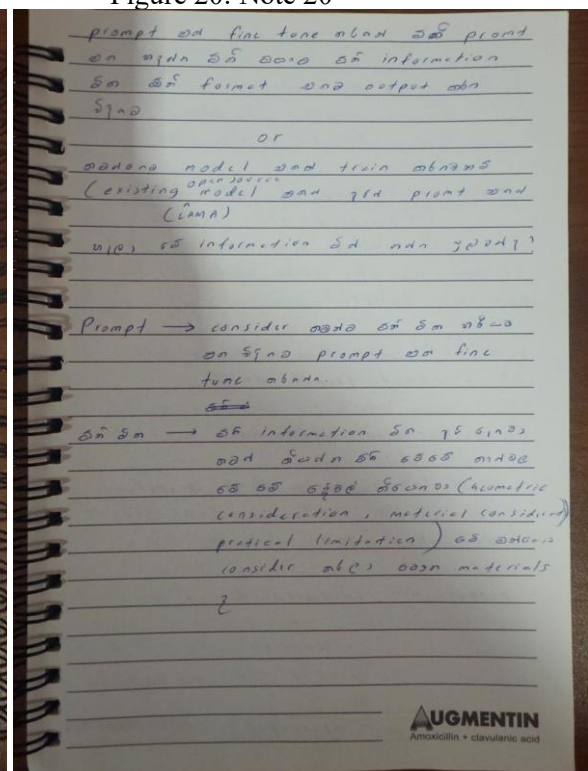
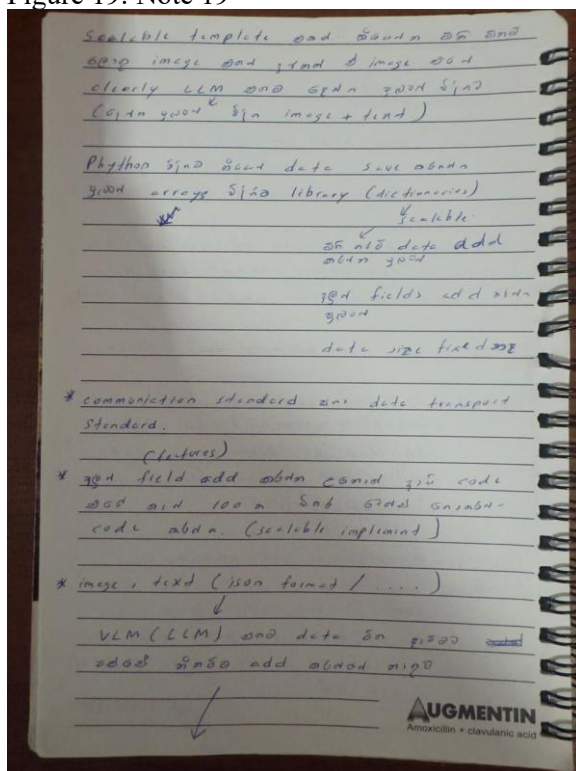
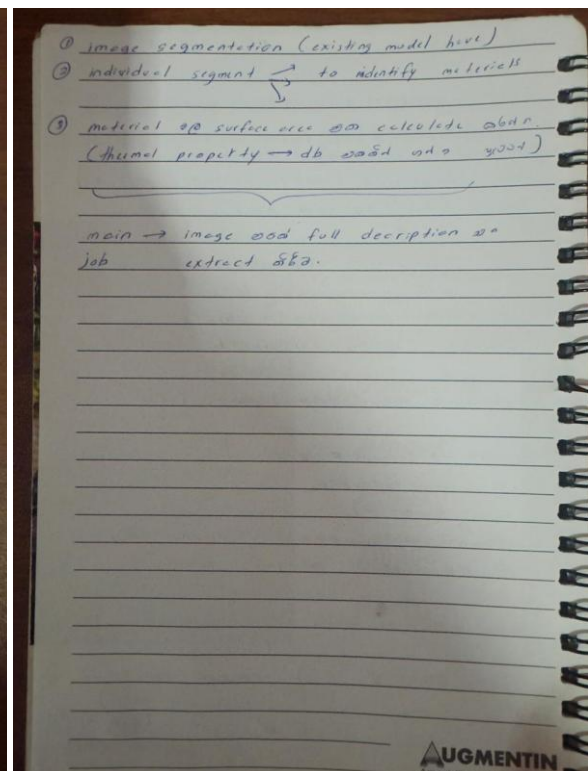
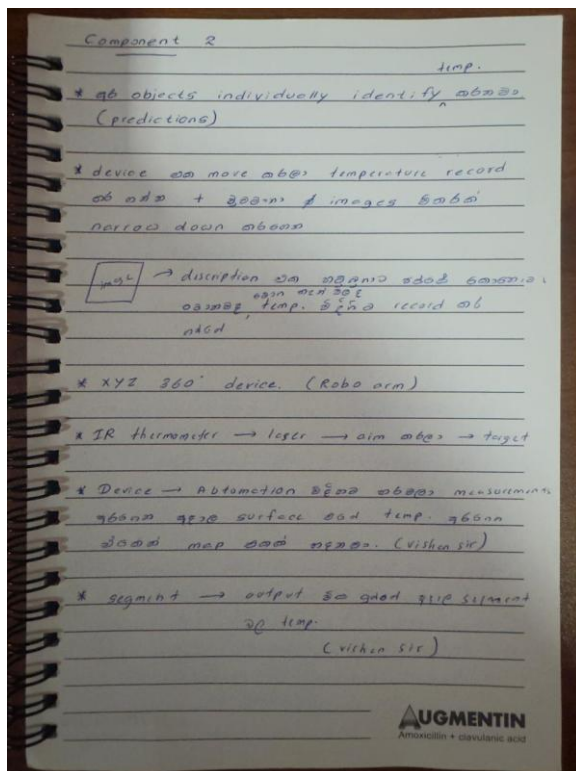


Figure 18: Note 18



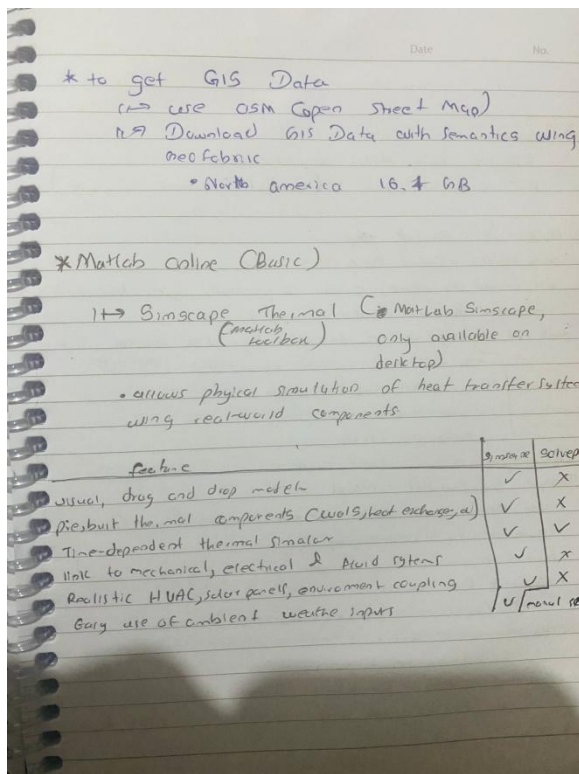


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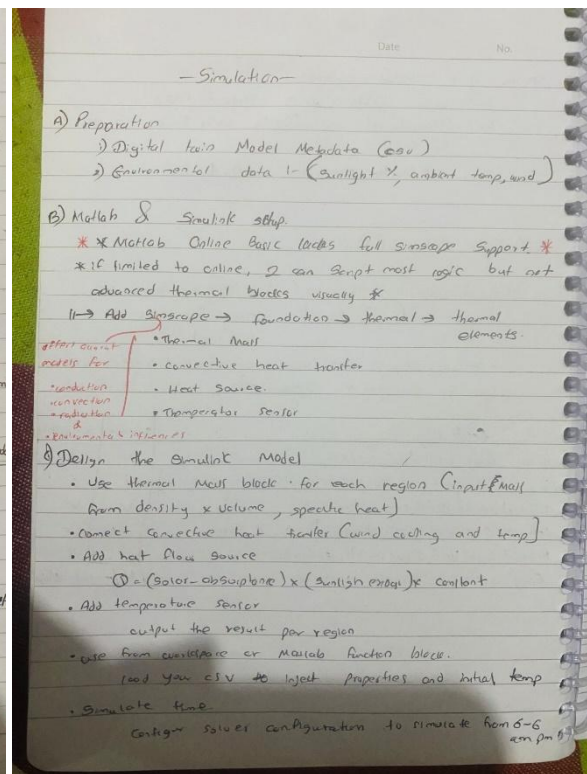


Figure 24: Note 24

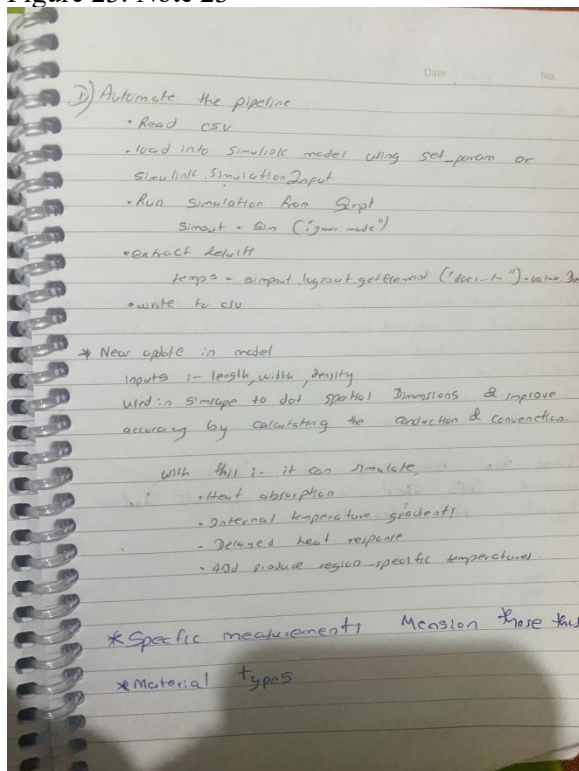


Figure 25: Note 25

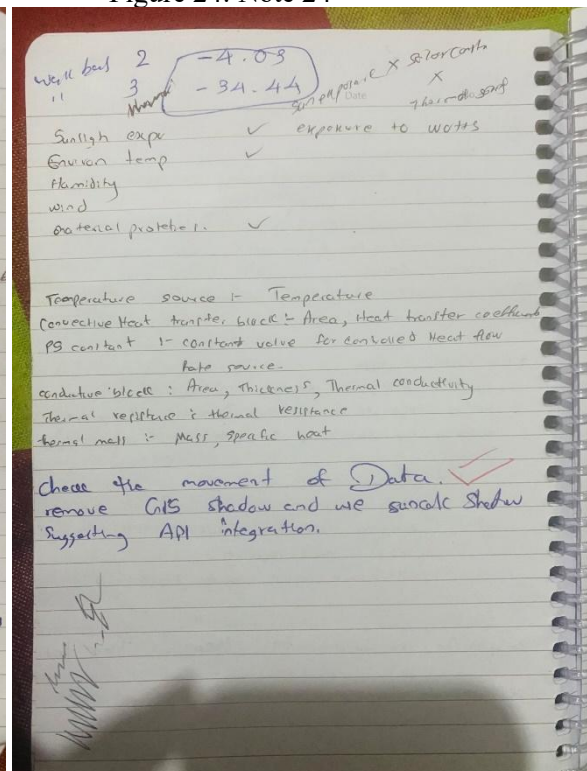


Figure 26: Note 26

4. Git Activity History

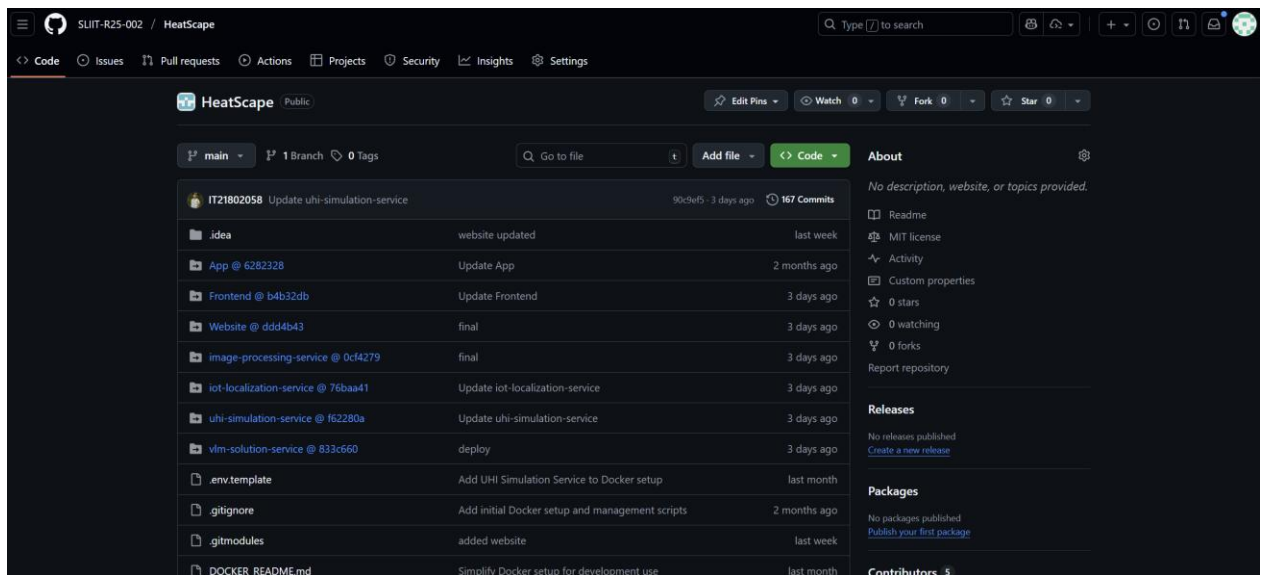


Figure 27: Git Repo

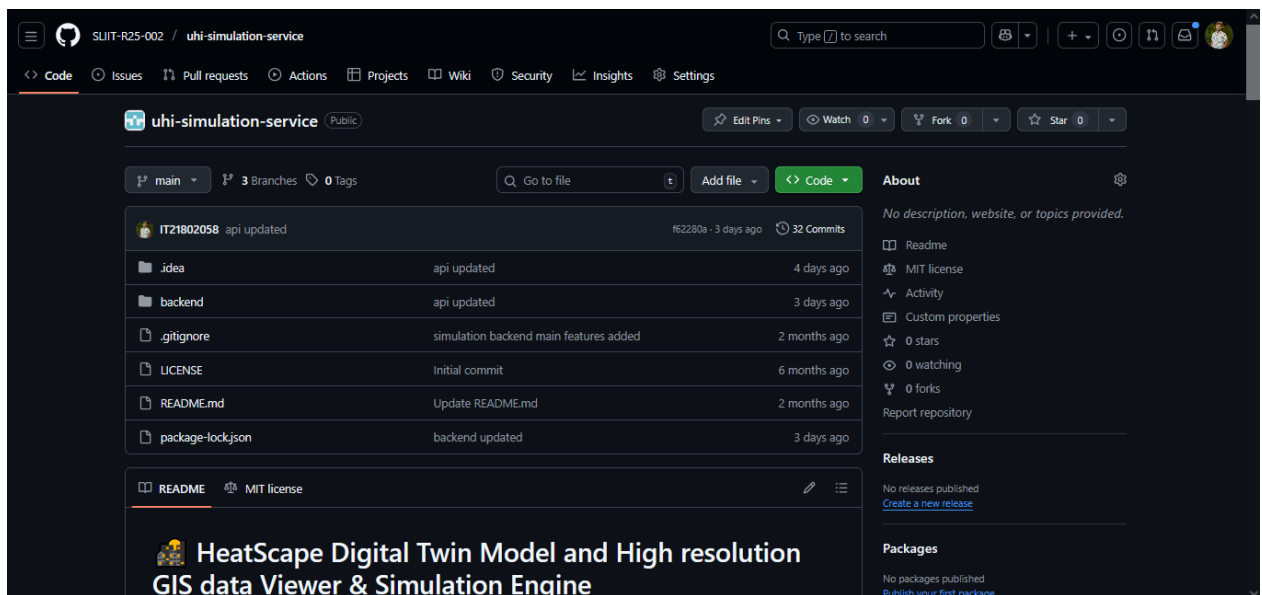


Figure 28: Git Repo (UHI simulation Microservice)

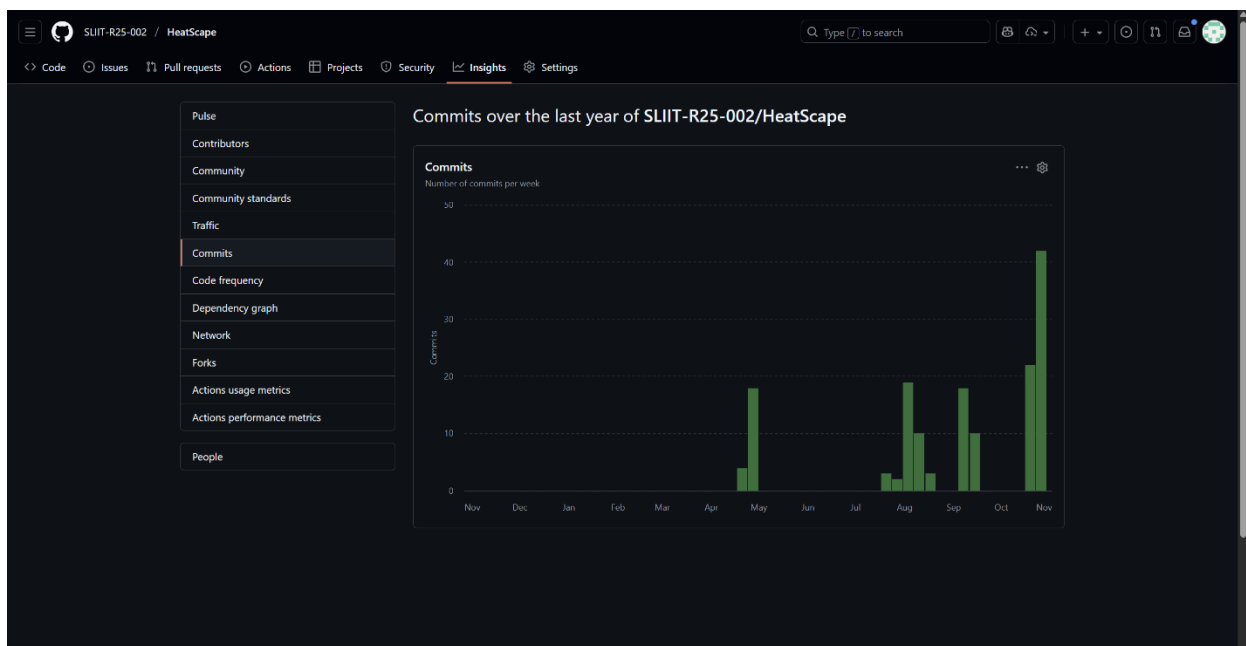


Figure 29: Git Code Commits (Main Repo)

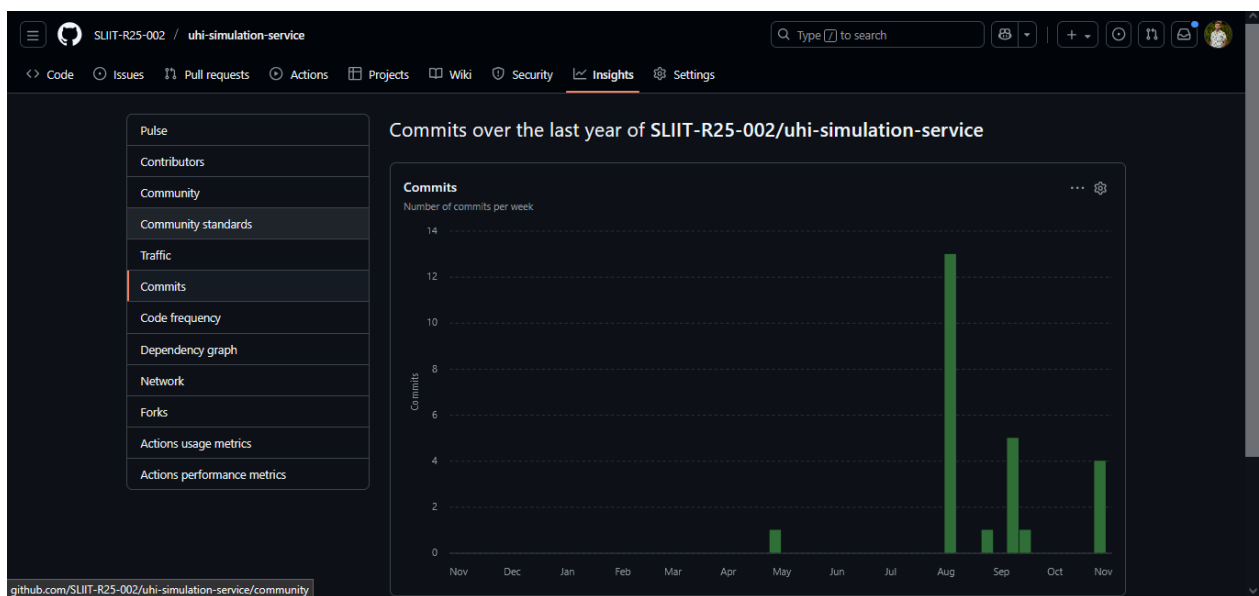


Figure 30: Git Code Commits (UHI simulation Microservice)

5. Screenshots of Meetings & Mails

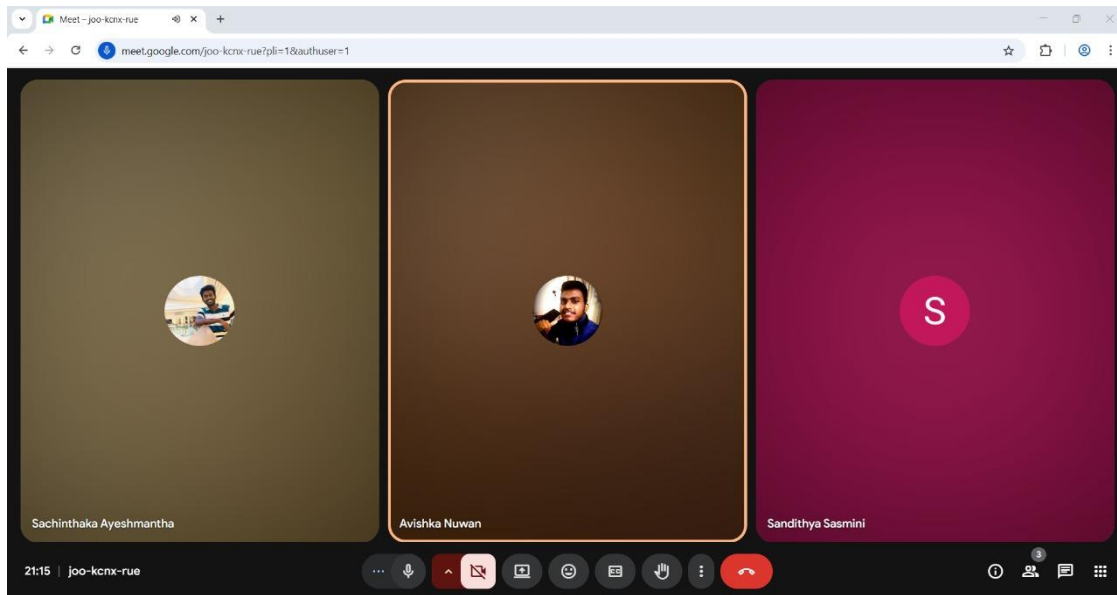


Figure 31 : Group Meeting

<input type="checkbox"/>	☆ Vishan Jayasinghear. 2	Inbox Canceled: Heat Island Research Meeting - On campus - Vishan Jayasinghearachchi. Microsoft Teams Need help? Join the meeting now. Meeting ID: 434 846 534 662 3. Passcode: P38cs9NUJ	Oct 28
<input type="checkbox"/>	☆ me, Rajit., Vishan 11	Inbox Heat Island Effect Research Paper Review - Cc: Vishan Jayasinghearachchi Subject: Re: Heat Island Effect Research Paper Review. [EXTERNAL EMAIL] This email has been received ...	Oct 21
<input type="checkbox"/>	☆ me, Vishan, Rajitha 3	Inbox Research paper acceptance update - To: Vishan Jayasinghearachchi ; Rajitha De Silva ; Kaushalya Rajapakse	Oct 24
<input type="checkbox"/>	☆ Vishan Jayasinghear. 2	Inbox Regarding WSA Competition - On Mon, Oct 20, 2025 at 10:54 AM Vishan Jayasinghearachchi wrote: Dear Ayeshmantha, Yes. Can you come this Wednesday at 1.30pm?	Oct 20
<input type="checkbox"/>	☆ me, Vishan 3	Inbox Regarding WSA Competition - To: Vishan Jayasinghearachchi Cc: Kaushalya Rajapakse Subject: Regarding WSA Competition	Oct 20
<input type="checkbox"/>	☆ Rajitha, me, Vishan 4	Inbox Re: Heat Island Research Meeting - On campus - Cc: Vishan Jayasinghearachchi ; Kaushalya Rajapakse Subject: Re: Heat Island Research Meeting - On campus	Oct 7
<input type="checkbox"/>	☆ Vishan Jayasinghear. 2	Inbox Regarding a Co-supervisor - To: Vishan Jayasinghearachchi Subject: Re: Regarding a Co-supervisor. Dear Sir, Could you please share Ms. Kaushalya's email ...	11/8/24
<input type="checkbox"/>	☆ Vishan Jayasinghear.	Inbox RE: Request for Supervision of Final Year Research Project - To: Vishan Jayasinghearachchi Cc: Kumara B.D.A.N I21256264 ; Silva.	9/23/24
<input type="checkbox"/>	☆ Vishan Jayasinghear.	Inbox Canceled: Heat Island Research Meeting - On campus - Vishan Jayasinghearachchi. Microsoft Teams Need help? Join the meeting now. Meeting ID: 434 846 534 662 3. Passcode: P38cs9NUJ	Oct 7
<input type="checkbox"/>	☆ Vishan Jayasinghear.	Inbox Canceled: Heat Island Research Meeting - Vishan Jayasinghearachchi. Microsoft Teams Need help? Join the meeting now. Meeting ID: 458 207 215 391. Passcode: Vt9zM7ui	12/11/24
<input type="checkbox"/>	☆ Vishan Jayasinghear.	Inbox Heat Island Research Meeting - Vishan Jayasinghearachchi. Disclaimer : This email and any attachment transmitted herewith are confidential and is intended solely for the use of the ...	12/10/24
<input type="checkbox"/>	☆ Vishan Jayasinghear.	Inbox Canceled: Heat Island Research Meeting - On campus - Vishan Jayasinghearachchi. Microsoft Teams Need help? Join the meeting now. Meeting ID: 434 846 534 662 3. Passcode: P38cs9NUJ	Oct 2
<input type="checkbox"/>	☆ Vishan Jayasinghear. 3	Inbox Heat Island Research Meeting - On campus - Vishan Jayasinghearachchi. Microsoft Teams Need help? Join the meeting now. Meeting ID: 434 846 534 662 3. Passcode: P38cs9NUJ	
<input type="checkbox"/>	☆ me	New research paper for ICITR Conference - Dear Sir, As we discussed over the phone, I have completed and attached the new research paper for the IoT component of our project.	Sep 30

Figure 32: Emails 1

<input type="checkbox"/>	☆	me, Rajitha, Vishan 6	Inbox Regarding ICAC Submission - From: it21219320 Ayeshmantha S.K.S Sent: Wednesday, August 20, 2025 2:25 AM To: Rajitha De Silva Cc: Vishan Jayasinghearachchi ; Kaushalya Rajapakse ... image.png +2	Aug 20
<input type="checkbox"/>	☆	me, Vishan 2	Inbox Progress Presentation 2 Update - To: Vishan Jayasinghearachchi Cc: Kaushalya Rajapakse ; Rajitha De Silva	Sep 19
<input type="checkbox"/>	☆	me, Vishan, Rajitha 3	Inbox Finalized research paper - To: Rajitha De Silva ; Vishan Jayasinghearachchi Subject: Finalized research paper HeatScape - De...	Aug 25
<input type="checkbox"/>	☆	Vishan Jayasinghear.	Inbox Request for Supervision of Final Year Research Project - From: Ayeshmantha S.K.S it21219320 Sent: Monday, September 23, 2024 9:44 AM To: Vishan Jayasinghearachchi	9/24/24
<input type="checkbox"/>	☆	Vishan, me 2	Inbox Canceled: Heat Island Research Meeting - On campus - Vishan Jayasinghearachchi. Microsoft Teams Need help? Join the meeting now. Meeting ID: 434 846 534 662 3. Passcode: P38cs9NU	Sep 8
<input type="checkbox"/>	☆	me, Vishan, Kaushal. 4	Inbox Regarding research mid marks - From: Kaushalya Rajapakse Sent: 12 September 2025 17:00 To: Vishan Jayasinghearachchi ; Ayeshmantha S.K.S it21219320 Subject: Re: Regarding research ...	Sep 12
<input type="checkbox"/>	☆	Vishan Jayasinghear. 3	Inbox Canceled: Heat Island Research Meeting - On campus - Dear all, Dr. Rajitha will join with our regular meeting online. I still prefer if the team members come for the meeting on campus.	Aug 21
<input type="checkbox"/>	☆	Vishan Jayasinghear.	Inbox Canceled: Heat Island Research Meeting - On campus - Best regards, Vishan Jayasinghearachchi. Microsoft Teams Need help? Join the meeting now Meeting ID: 434 846 534 662 3 Passcode: P38cs9NU	Aug 22
<input type="checkbox"/>	☆	me, Vishan 2	Inbox Academic Coach for DevQuest - To: Vishan Jayasinghearachchi Subject: Academic Coach for DevQuest. [EXTERNAL EMAIL] This email has been received from an external ...	Sep 1
<input type="checkbox"/>	☆	Vishan Jayasinghear. 2	Inbox FW: 🍌 Rajitha is ready to work with you on Heat Island Research Project in Notion - From: Ayeshmantha S.K.S it21219320 Sent: Thursday, November 21, 2024 11:46 AM To: Vishan Jayasinghearachchi Cc: ...	11/21/24
<input type="checkbox"/>	☆	Vishan Jayasinghear.	Inbox RE: Updated Draft of Research Paper for Review - To: Vishan Jayasinghearachchi Subject: Updated Draft of Research Paper for Review. Dear Sir, I hope you're doing well. HeatScape.pdf	Jun 26
<input type="checkbox"/>	☆	Vishan Jayasinghear.	Inbox Confirmation of Research Project Supervisor - To: Vishan Jayasinghearachchi Subject: Re: Confirmation of Research Project Supervisor. Dear Sir, Thank you for your response.	10/16/24
<input type="checkbox"/>	☆	Vishan Jayasinghear.	Inbox Heat Island Research Meeting - On campus - Dear all, Dr. Rajitha will join with our regular meeting online. I still prefer if the team members come for the meeting on campus.	Jul 24
<input type="checkbox"/>	☆	Vishan Jayasinghear.	Inbox Heat Island Research Meeting - On campus - Dear all, Dr. Rajitha will join with our regular meeting online. I still prefer if the team members come for the meeting on campus.	Jul 23
<input type="checkbox"/>	☆	Kaushalya Rajapakse	Inbox Re: Request for Co-Supervision of Final Year Research Project - From: Ayeshmantha S.K.S it21219320 Sent: 11 November 2024 12:49 To: Kaushalya Rajapakse Cc: Vishan Jayasinghearachchi ; Silva.	11/11/24
<input type="checkbox"/>	☆	Vishan Jayasinghear.	Inbox Heat Island Research Meeting - On campus - Dear all, Pushing this meeting to 3.30 pm due to faculty board meetings. Best regards, Vishan Jayasinghearachchi. Time updated as discussed.	Mar 20

Figure 33: Emails 2

<input type="checkbox"/>	☆	Vishan Jayasinghear. 4	Inbox Re: Confirmation of Research Project Supervisor - From: Ayeshmantha S.K.S it21219320 Sent: Friday, September 27, 2024 9:46 PM To: Vishan Jayasinghearachchi Subject: Confirmation of Research Project ...	10/16/24
<input type="checkbox"/>	☆	Vishan Jayasinghear.	Inbox Tentative: Research Paper Review #2 - Disclaimer : This email and any attachment transmitted herewith are confidential and is intended solely for the use of the individual or entity to ...	Jul 29
<input type="checkbox"/>	☆	Vishan Jayasinghear. 2	Inbox Heat Island Research Meeting - Vishan Jayasinghearachchi. Microsoft Teams Need help? Join the meeting now. Meeting ID: 458 207 215 391. Passcode: Vt9zM7ui	Apr 11
<input type="checkbox"/>	☆	me, Rajitha 5	Inbox Research paper review - To: Rajitha De Silva ; Vishan Jayasinghearachchi Subject: Research paper review	Aug 19
<input type="checkbox"/>	☆	Vishan Jayasinghear.	Inbox Canceled: Heat Island Research Meeting - On campus - Canceling due to the May day holiday. Disclaimer : This email and any attachment transmitted herewith are confidential and is intended solely for the ...	Apr 30
<input type="checkbox"/>	☆	Vishan Jayasinghear.	Inbox Heat Island Research Meeting - On campus - Dear all, Moving the meeting to 2pm as requested. Microsoft Teams Need help? Join the meeting now. Meeting ID: 484 102 012 728. Passcode: we6uJ9rz	May 28
<input type="checkbox"/>	☆	Vishan Jayasinghear.	Inbox Heat Island Research Meeting - On campus - Dear all, Dr. Rajitha will join with our regular meeting online. I still prefer if the team members come for the meeting on campus.	Apr 11
<input type="checkbox"/>	☆	Vishan Jayasinghear. 3	Inbox RP meeting - From: Ayeshmantha S.K.S it21219320 Sent: Wednesday, November 6, 2024 3:59 PM To: Vishan Jayasinghearachchi Subject: Re: RP meeting Dear Sir, ...	11/6/24
<input type="checkbox"/>	☆	Vishan Jayasinghear. 2	Inbox Canceled: Heat Island Research Meeting - Vishan Jayasinghearachchi. Microsoft Teams Need help? Join the meeting now. Meeting ID: 458 207 215 391. Passcode: Vt9zM7ui	Apr 11
<input type="checkbox"/>	☆	Vishan Jayasinghear.	Inbox Heat Island Research Meeting - Best regards, Vishan Jayasinghearachchi. Microsoft Teams Need help? Join the meeting now Meeting ID: 458 207 215 391 Passcode: Vt9zM7ui	11/27/24
<input type="checkbox"/>	☆	Vishan Jayasinghear.	Inbox Heat Island Research Meeting - Best regards, Vishan Jayasinghearachchi. Microsoft Teams Need help? Join the meeting now Meeting ID: 458 207 215 391 Passcode: Vt9zM7ui	11/28/24
<input type="checkbox"/>	☆	Vishan Jayasinghear.	Inbox Re: Update on project proposal presentation - From: Ayeshmantha S.K.S it21219320 Sent: Tuesday, January 28, 2025 11:14 AM To: Vishan Jayasinghearachchi Subject: Update on project proposal ...	Jan 29
<input type="checkbox"/>	☆	Vishan Jayasinghear.	Inbox Canceled: Heat Island Research Meeting - On campus - Dear all, Cancelling due to Poya holiday. Microsoft Teams Need help? Join the meeting now. Meeting ID: 484 102 012 728. Passcode: we6uJ9rz	Jul 8
<input type="checkbox"/>	☆	Vishan Jayasinghear.	Inbox Heat Island Research Meeting - On campus - Disclaimer : This email and any attachment transmitted herewith are confidential and is intended solely for the use of the individual or entity to ...	Mar 20
<input type="checkbox"/>	☆	Vishan Jayasinghear.	Inbox Heat Island Research Meeting - Dear all, The meeting discuss the heat island research work as discussed. Best regards, Vishan Jayasinghearachchi. Microsoft Teams Need help?	11/19/24
<input type="checkbox"/>	☆	Vishan Jayasinghear.	Inbox Heat Island Research Meeting - Vishan Jayasinghearachchi. Microsoft Teams Need help? Join the meeting now. Meeting ID: 458 207 215 391. Passcode: Vt9zM7ui	11/21/24
<input type="checkbox"/>	☆	Vishan Jayasinghear.	Inbox Canceled: Heat Island Research Meeting - On campus - Cancelling due to the examinations. Microsoft Teams Need help? Join the meeting now. Meeting ID: 484 102 012 728. Passcode: we6uJ9rz	May 29
<input type="checkbox"/>	☆	Vishan Jayasinghear.	Inbox Heat Island Research Meeting - Vishan Jayasinghearachchi. Microsoft Teams Need help? Join the meeting now. Meeting ID: 458 207 215 391. Passcode: Vt9zM7ui	Jan 3
<input type="checkbox"/>	☆	Vishan Jayasinghear.	Inbox Heat Island Research Meeting - On campus - Vishan Jayasinghearachchi. Disclaimer : This email and any attachment transmitted herewith are confidential and is intended solely for the use of the ...	Jan 3
<input type="checkbox"/>	☆	Vishan Jayasinghear.	Inbox Re: Inquiry about meeting tomorrow - From: Ayeshmantha S.K.S it21219320 Sent: Wednesday, April 2, 2025 4:37 PM To: Vishan Jayasinghearachchi Cc: Kaushalya Rajapakse Subject: Inquiry about ...	Apr 3

Figure 34: Emails 3

<input type="checkbox"/>	☆	Vishan Jayasinghear.	Inbox RE: Reminder - Imagine Cup & Author List - vishan.j@slit.lk> Subject: Reminder - Imagine Cup & Author List Hi Vishan Sir, Just a quick reminder from our last	Aug 11
<input type="checkbox"/>	☆	Rajitha, me 8	Inbox Re: Clarification on Daily Research Paper Discussion Sessions - vishan.j@slit.lk> ; Kaushalya Rajapakse Subject: Re: Clarification on Daily Research	Jul 23
<input type="checkbox"/>	☆	Vishan Jayasinghear.	Inbox Article on creating digital twins - Dear Ayeshmantha, Dhanushikan, This article provides a good overview of the process of developing a	Jul 14
<input type="checkbox"/>	☆	it21802058 Madhuwan.	Inbox Fwd: Clarification on Simulation Scope Regarding GIS Metadata Integration - vishan.j@slit.lk> Dear Dr. Rajitha and Mr. Vishan, I hope this message finds you well. I'm writing to clarify an	Jul 6
<input type="checkbox"/>	☆	Rajitha De Silva 2	Inbox Re: HeatScape Research Paper - vishan.j@slit.lk> ; Kaushalya Rajapakse Subject: Re: HeatScape Research Paper	Jun 30
<input type="checkbox"/>	☆	Vishan Jayasinghear.	Inbox RE: Draft Research Paper - HeatScape - vishan.j@slit.lk> Cc: Kaushalya Rajapakse Subject: Draft Research Paper - HeatScape	Jun 20
<input type="checkbox"/>	☆	Vishan, me 4	Inbox RE: Quick Clarification on Research Paper Scope - vishan.j@slit.lk> wrote: > Dear Ayeshmantha, > > I'm ok, can you kindly check with Dr. Rajitha? If so	May 27
<input type="checkbox"/>	☆	Vishan Jayasinghear.	Inbox Canceled: Heat Island Research Meeting - On campus - Cancelling due to new year holidays.	Apr 11
<input type="checkbox"/>	☆	Vishan Jayasinghear.	Inbox Canceled: Heat Island Research Meeting - On campus - Disclaimer : This email and any attachment transmitted herewith are confidential and is intended	Apr 3
<input type="checkbox"/>	☆	Vishan Jayasinghear. 2	Inbox RE: Heat Island Research Meeting - On campus - vishan.j@slit.lk> ; Kumara EDAN it21256264 ; Silva.GMSS it21802126 <it21802126	Mar 10
<input type="checkbox"/>	☆	Vishan Jayasinghear.	Inbox Canceled: Heat Island Research Meeting - On campus - Dear all, I will be on leave tomorrow. Instead, I can give you time on Tuesday (11th March) around	Mar 5
<input type="checkbox"/>	☆	Vishan Jayasinghear.	Inbox Canceled: Heat Island Research Meeting - On campus - Disclaimer : This email and any attachment transmitted herewith are confidential and is intended	Feb 20
<input type="checkbox"/>	☆	Vishan Jayasinghear.	Inbox Heat Island Research Meeting - On campus - Time updated as discussed. Disclaimer : This email and any attachment transmitted herewith are	Jan 21
<input type="checkbox"/>	☆	Vishan Jayasinghear.	Inbox RE: Regarding the charter document - vishan.j@slit.lk> Cc: Kaushalya Rajapakse Subject: Regarding the charter document	Jan 6
<input type="checkbox"/>	☆	Vishan Jayasinghear.	Inbox Heat Island Research Meeting - On campus - Disclaimer : This email and any attachment transmitted herewith are confidential and is intended	Jan 3
<input type="checkbox"/>	☆	Vishan Jayasinghear. 2	Inbox Re: Checking Availability on the 18th - https://www.epa.gov/heatislands/learn-about-heat-islands Best regards, Vishan Jayasinghearachchi From	11/18/24

Figure 35: Emails 4

6. Gallery

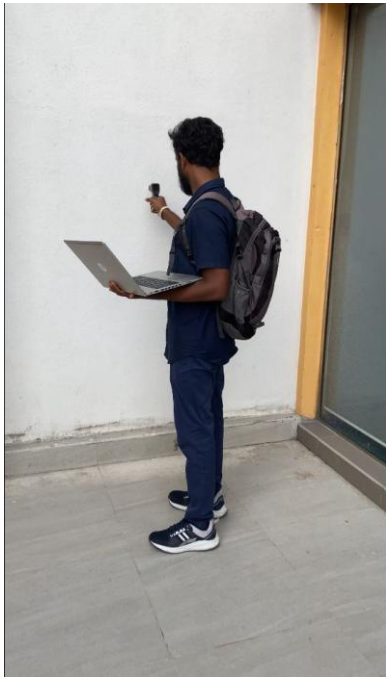


Figure 36: Validation Testing 1

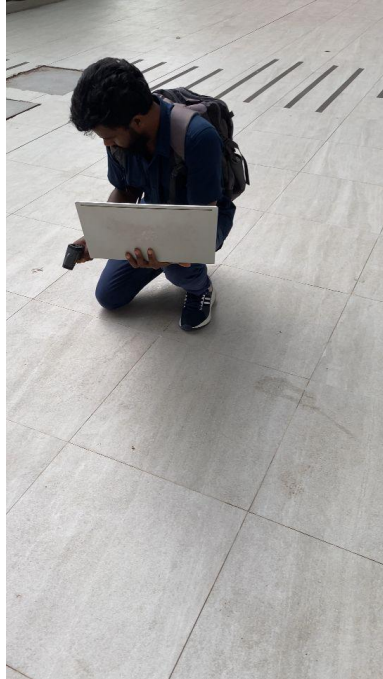


Figure 37: Validation Testing 2



Figure 38: Validation Testing 3



Figure 39: Final Presentation Completed