

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

Project ID: R25-002

Logbook

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October 2025

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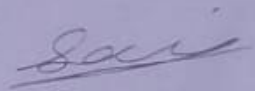
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## DECLARATION

I declare that this is my own work and this dissertation does not incorporate without acknowledgement any material previously submitted for a degree or Diploma in any other University or institute of higher learning and to the best of my knowledge and belief it does not contain any material previously published or written by another person except where the acknowledgement is made in the text.

Also, I hereby grant to Sri Lanka Institute of Information Technology, the nonexclusive right to reproduce and distribute my dissertation, in whole or in part in print, electronic or other medium. I retain the right to use this content in whole or part in future works (such as articles or books).

Name	Student ID	Signature
Ayeshmantha S. K. S.	IT21219320	

The supervisor/s should certify the LogBook with the following declaration.

The above candidate has carried out research for the bachelor's degree Dissertation under my supervision.

  
.....  
Mr. Vishan Jayasinghearachchi  
Supervisor

31/10/2023  
.....  
Date

## 1. Work Progress

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

Week 1	<ul style="list-style-type: none"> <li>Started creating Charter and proposal.</li> <li>Met with the supervisor and co supervisor to obtain the signature for the charter document.</li> </ul>
Week 2	<ul style="list-style-type: none"> <li>Completed creating the proposal presentation</li> </ul>
Week 3	<ul style="list-style-type: none"> <li>Had our physical meeting to present the proposal presentation as trial run</li> </ul>
Week 4	<ul style="list-style-type: none"> <li>Did a proposal presentation.</li> <li>Submitted proposal report (final) to the CDAP cloud</li> </ul>
<b>February</b>	
Week 1	<ul style="list-style-type: none"> <li>Conducted a group meeting to discuss the proposal result.</li> <li>With a team meeting discussed how to begin the development.</li> </ul>
Week 2	<ul style="list-style-type: none"> <li>Gathered information on how I can develop my system and faced some difficulties.</li> </ul>
Week 3	<ul style="list-style-type: none"> <li>Discussed the issues with supervisors and identified solutions together</li> </ul>
Week 4	<ul style="list-style-type: none"> <li>Started looking into what kind of hardware I needed to build the iot device</li> <li>Searched for cheaper alternatives for expensive ones</li> </ul>
<b>March</b>	
Week 1	<ul style="list-style-type: none"> <li>Showed my findings to supervisors and they suggested me with some cheaper alternatives for ones which I couldn't find</li> </ul>
Week 2	<ul style="list-style-type: none"> <li>Started working on coding and testing individual hardware components.</li> </ul>
Week 3	<ul style="list-style-type: none"> <li>Showed my progress and get feedback on how to improve the code and make the process better</li> </ul>
Week 4	<ul style="list-style-type: none"> <li>Continue developing the IoT device.</li> <li>Created a housing out of scrap cardboard for demonstration</li> </ul>
<b>April</b>	
Week 1	<ul style="list-style-type: none"> <li>Prepared PowerPoint slides for Progress Presentation 1.</li> </ul>
Week 2	<ul style="list-style-type: none"> <li>Did the progress presentation 1.</li> </ul>
Week 3	<ul style="list-style-type: none"> <li>Conducted a group meeting to discuss the progress presentation result.</li> </ul>
Week 4	<ul style="list-style-type: none"> <li>Started searching for more hardware components to allow the IoT to navigate autonomously</li> <li>External supervisor suggested a pretrained model that allowed to match images</li> </ul>
<b>May</b>	

Week 1	<ul style="list-style-type: none"> <li>Started looking for options for strong and sturdy replacement for the cardboard housing</li> </ul>
Week 2	<ul style="list-style-type: none"> <li>Discussed with supervisor about the IoT device housing issue and 3d printing was suggested.</li> <li>Participated in a “How to Write a Research Paper” discussion.</li> </ul>
Week 3	<ul style="list-style-type: none"> <li>Started frontend design and development to manually control the IoT device before automating</li> </ul>
Week 4	<ul style="list-style-type: none"> <li>Created 3d model of housing for 3d printing.</li> <li>Requested quotations for printing from multiple shops.</li> </ul>
<b>June</b>	
Week 1	<ul style="list-style-type: none"> <li>Continued the design and development of the web app frontend.</li> </ul>
Week 2	<ul style="list-style-type: none"> <li>Started working on the python backend and integrated the superglue model suggested by external supervisor</li> </ul>
Week 3	<ul style="list-style-type: none"> <li>Got the requested quotations from the different stores and the price to print was too high</li> </ul>
Week 4	<ul style="list-style-type: none"> <li>Discussed the cost issue with supervisors and they suggested acrylic sheet as an alternative</li> </ul>
<b>July</b>	
Week 1	<ul style="list-style-type: none"> <li>Purchased acrylic sheet.</li> <li>Searched for laser printing shops to get it cut</li> </ul>
Week 2	<ul style="list-style-type: none"> <li>Began writing our research paper.</li> <li>Reviewed existing research papers related to our component to support the writing of our research paper</li> </ul>
Week 3	<ul style="list-style-type: none"> <li>Sent our written research paper to the supervisor for checking.</li> </ul>
Week 4	<ul style="list-style-type: none"> <li>Revised the research paper based on the supervisor’s feedback.</li> </ul>
<b>August</b>	
Week 1	<ul style="list-style-type: none"> <li>The supervisor confirmed our research paper for submission to the ICAC conference.</li> </ul>
Week 2	<ul style="list-style-type: none"> <li>Started writing the individual final report.</li> <li>Submitted our research paper to the ICAC conference.</li> </ul>
Week 3	<ul style="list-style-type: none"> <li>Had a team meeting and discussed the PP2 and individual components.</li> <li>Organized a team meeting to plan the final report.</li> </ul>
Week 4	<ul style="list-style-type: none"> <li>Met with the supervisor to obtain the signature for the final report.</li> <li>Completed individual final report and submitted to the CDAP.</li> <li>Final report was sent for proofreading.</li> </ul>
<b>September</b>	

Week 1	<ul style="list-style-type: none"> <li>• Had a team meeting and discussed the PP2</li> <li>• Developed an algorithm for automatic navigation</li> <li>• Started creating the PP2 slides.</li> <li>•</li> </ul>
Week 2	<ul style="list-style-type: none"> <li>• Checked that 90% of the HeatScape app is working correctly.</li> <li>• Presented the 90% progress to the panel at PP2</li> </ul>
Week 3	<ul style="list-style-type: none"> <li>• Shared the panel comments with the supervisors</li> <li>• Demonstrated how the algorithm worked to the supervisors</li> <li>• Continued some integration work between the frontend and backend.</li> </ul>
Week 4	<ul style="list-style-type: none"> <li>• Started creating the project website.</li> <li>• Looked into deployment strategies for the models</li> </ul>
<b>October</b>	
Week 1	<ul style="list-style-type: none"> <li>• Did validation testing around the campus</li> <li>• Found heat island in tennis court</li> </ul>
Week 2	<ul style="list-style-type: none"> <li>• A research paper status mail was received from ICAC.</li> <li>• Attending research discussion.</li> </ul>
Week 3	<ul style="list-style-type: none"> <li>• Deployed system to AWS.</li> <li>• Prepared final presentation</li> <li>• Created UI/UX Demo video</li> <li>• Applied to WSA Competition</li> </ul>
Week 4	<ul style="list-style-type: none"> <li>• Presented the final presentation</li> </ul>

## 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	Trial run of proposal presentation; feedback on flow and clarity.



	Building	
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	Shared early IoT component research; discussed hardware sourcing.
Feb 20, 2025 (Thu)	6th Floor, Main Building	Supervisor feedback on hardware feasibility; advised cheaper alternatives.
Feb 27, 2025 (Thu)	Microsoft Teams	Follow-up on hardware procurement and coding progress.
Mar 6, 2025 (Thu)	6th Floor, Main Building	Reviewed IoT coding progress; discussed testing plan.
Mar 13, 2025 (Thu)	Microsoft Teams	Discussed initial prototype issues; planned next testing cycle.
Mar 20, 2025 (Thu)	6th Floor, Main Building	Supervisor review on IoT prototype; 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 hardware upgrades for autonomous navigation.
Apr 24, 2025 (Thu)	Microsoft Teams	Introduced pretrained model from external supervisor for matching images.
May 1, 2025 (Thu)	6th Floor, Main Building	Discussed IoT device housing; 3D printing suggested.
May 8, 2025 (Thu)	Microsoft Teams	Reviewed 3D model design and quotations for printing.
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 acrylic sheet as IoT housing alternative.
Jun 5, 2025 (Thu)	Microsoft Teams	Supervisor reviewed Python backend and SuperGlue integration.
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	Final presentation review; validation testing and WSA submission updates.

### 3. Meeting Notes

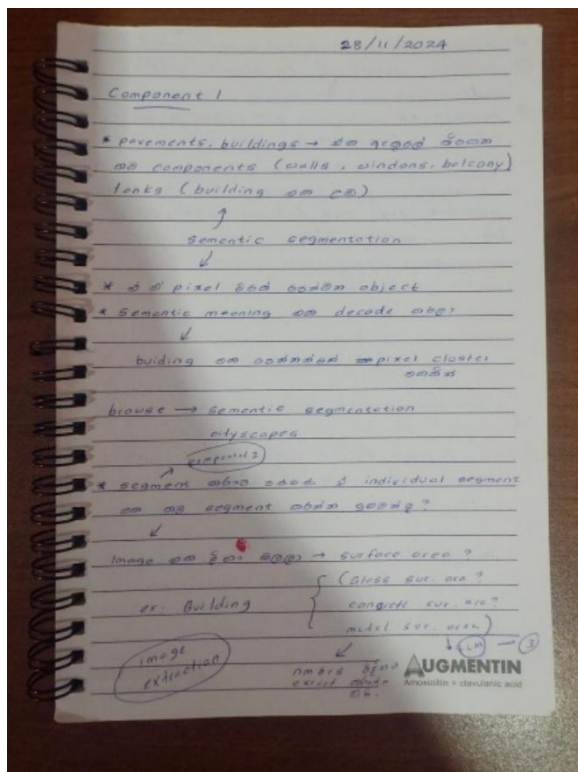


Figure 1: Note 1

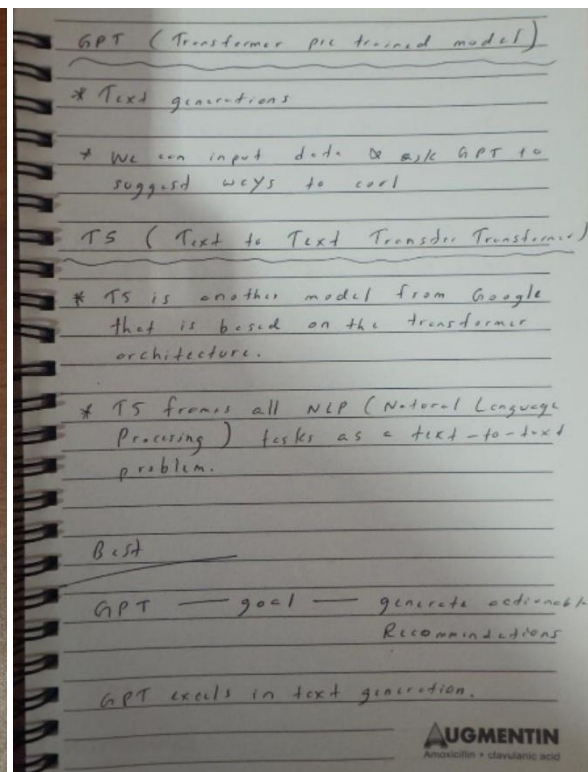


Figure 2: Note 2

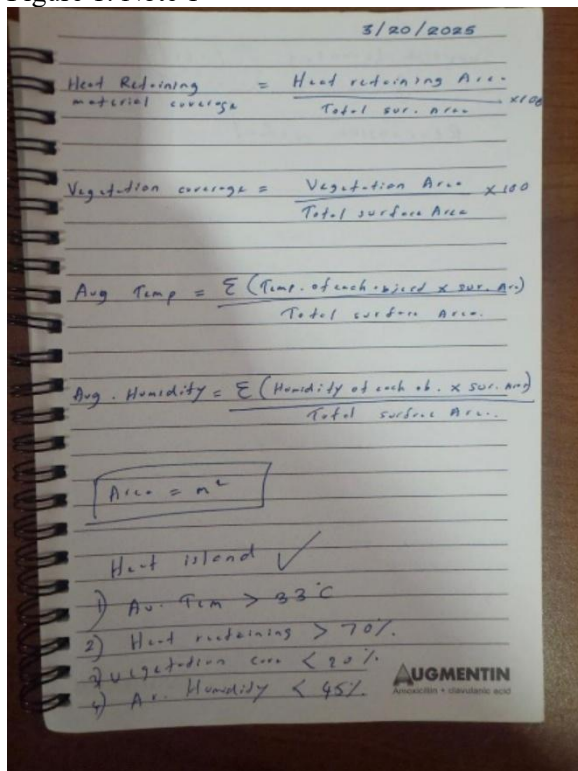


Figure 3: Note 3

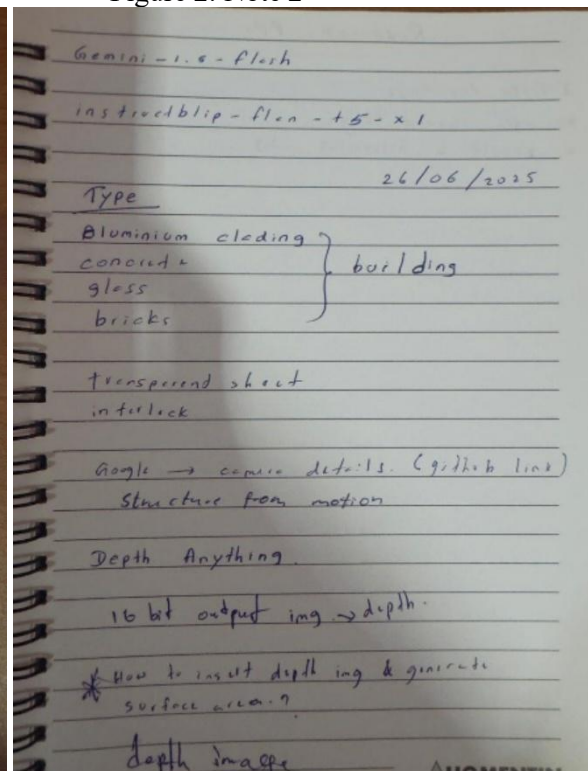


Figure 4: Note 4

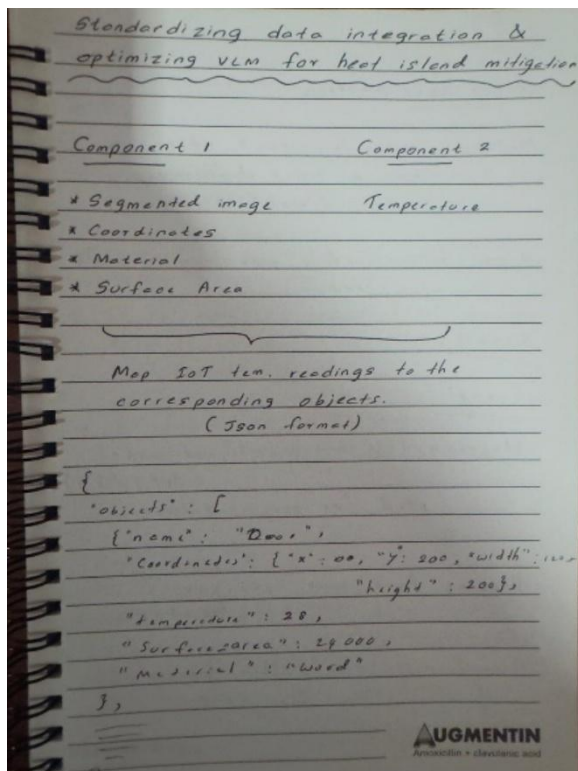


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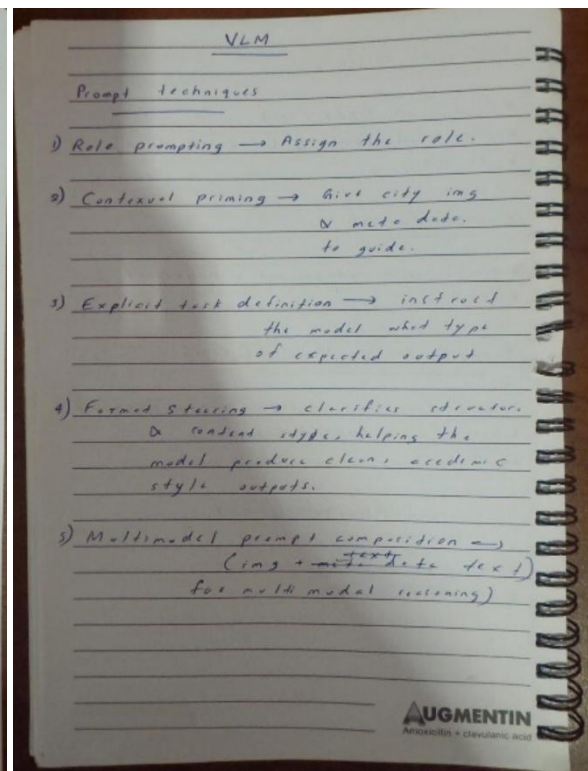


Figure 6: Note 6

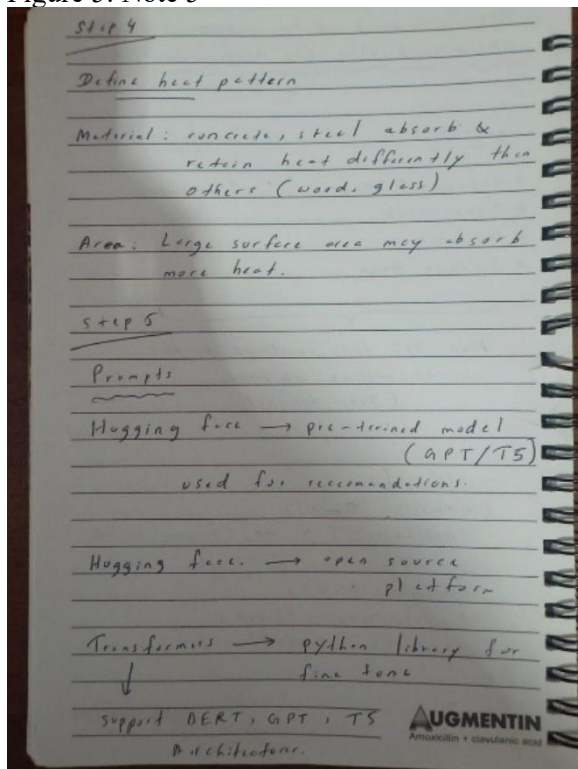


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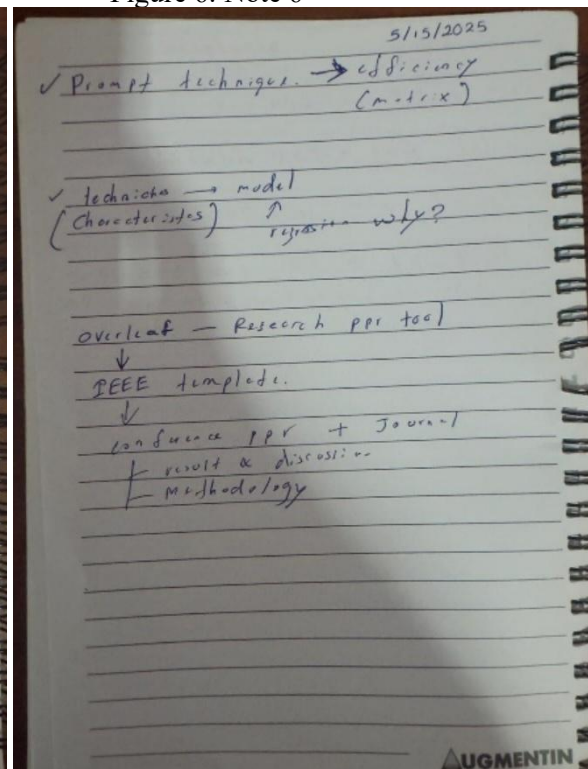


Figure 8: Note 8



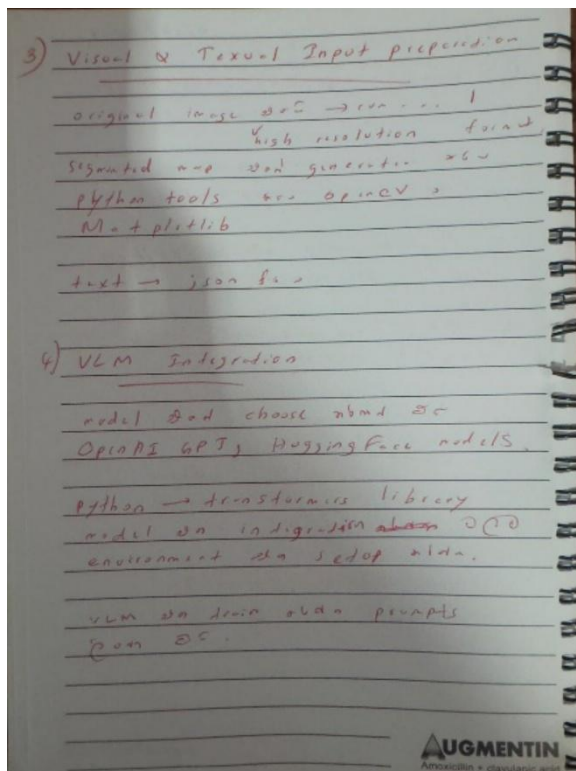


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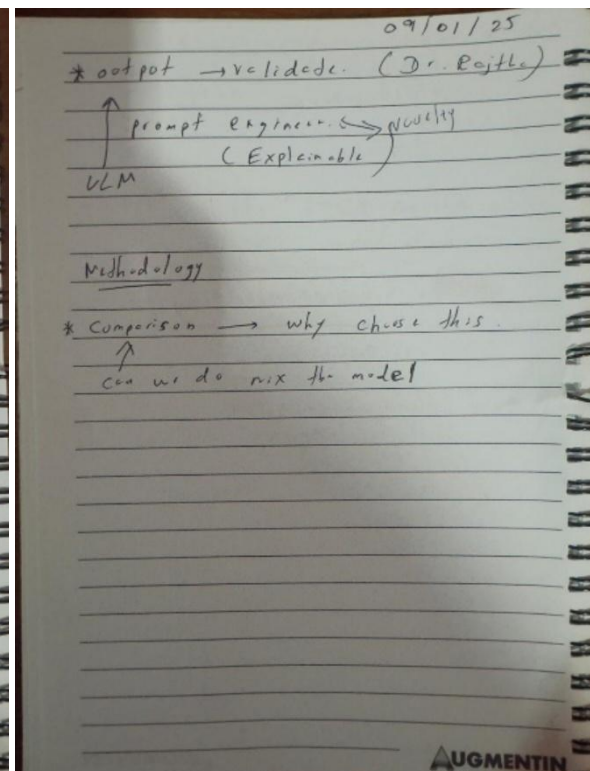


Figure 10: Note 10

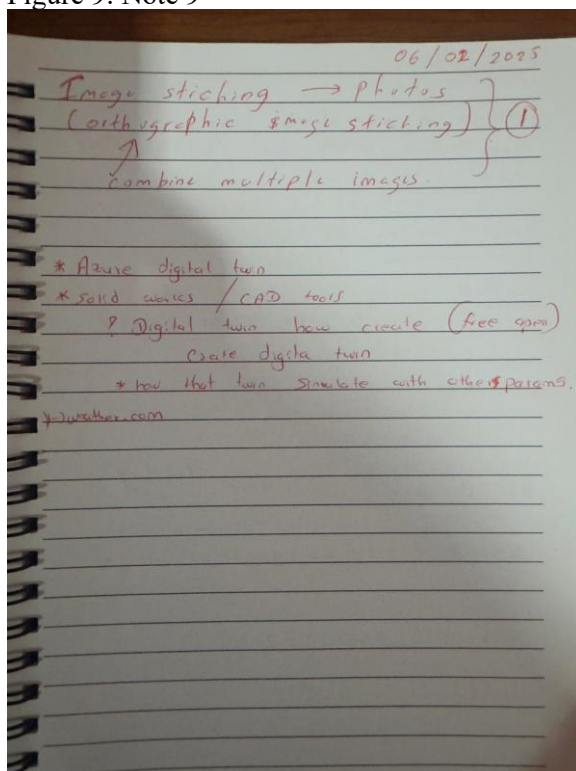


Figure 11: Note 11

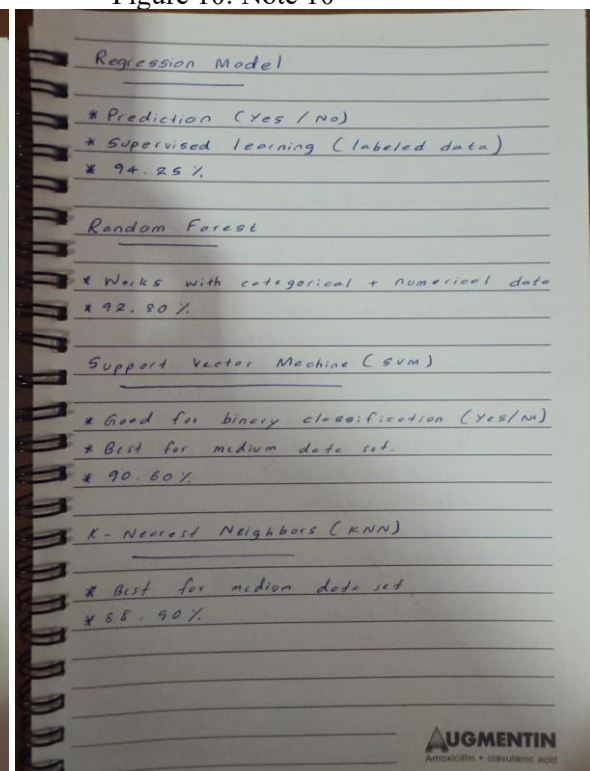


Figure 12: Note 12

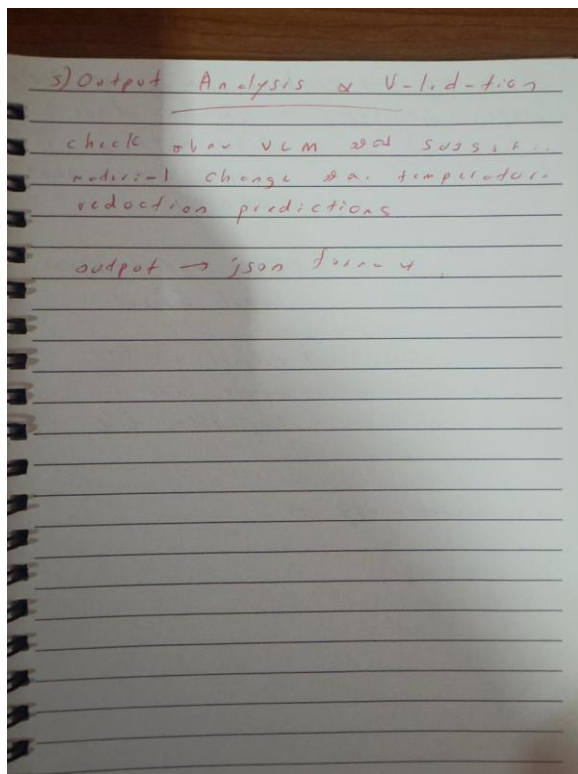


Figure 13: Note 13

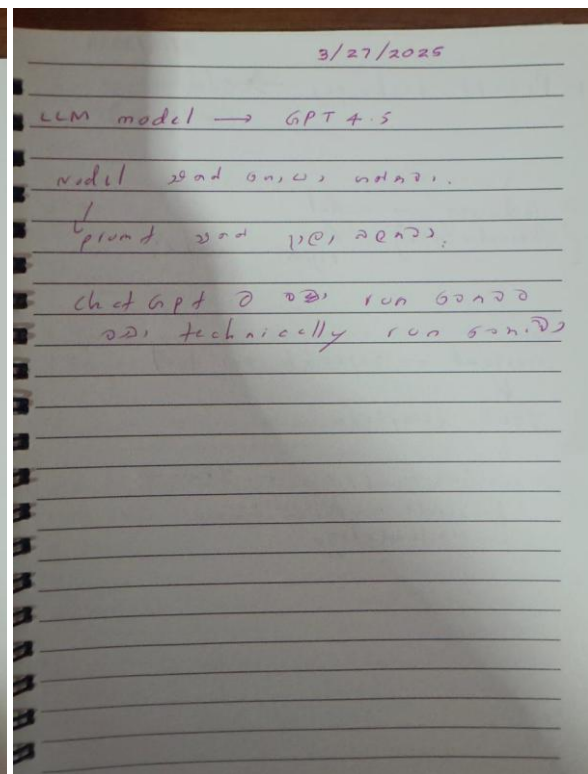


Figure 14: Note 14

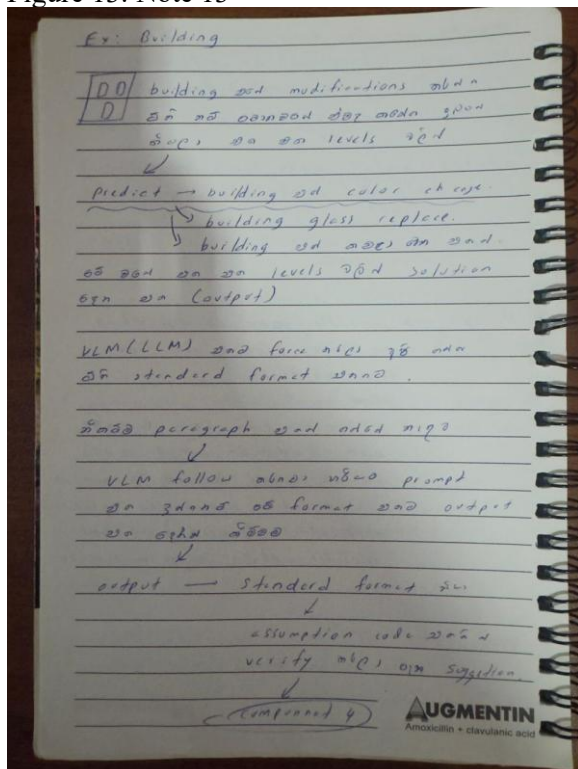


Figure 15: Note 15

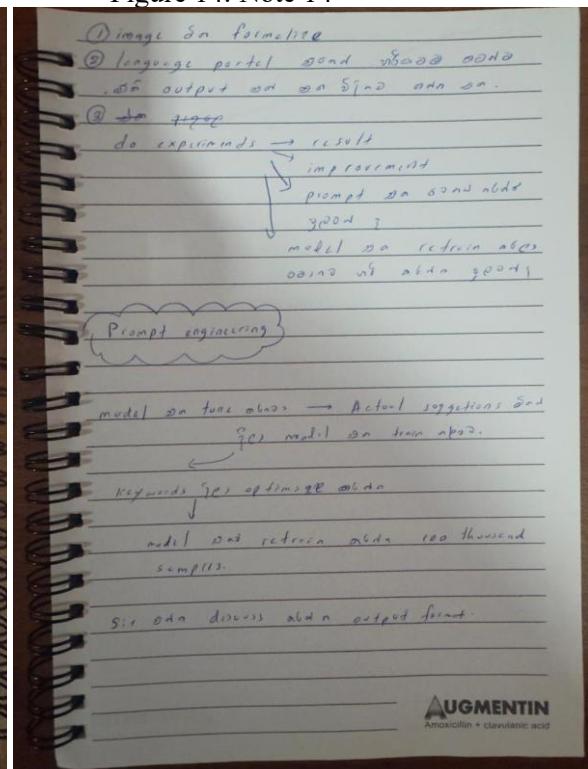


Figure 16: Note 16



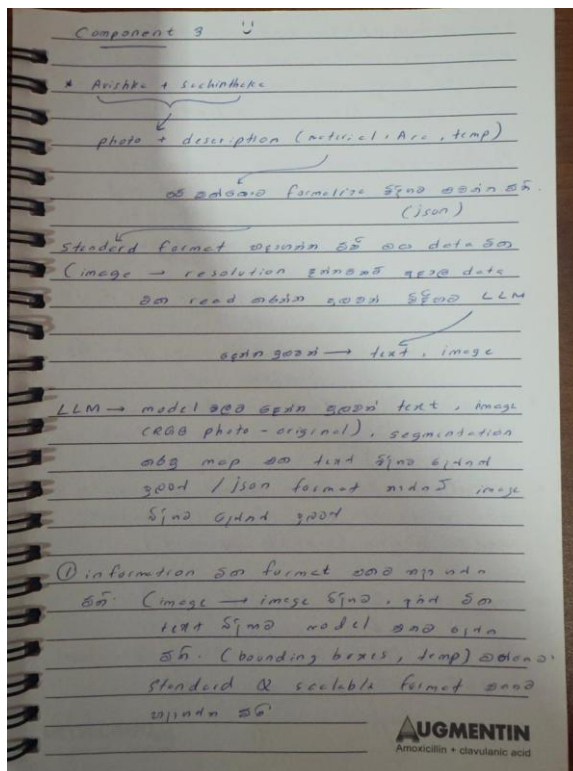


Figure 17: Note 17

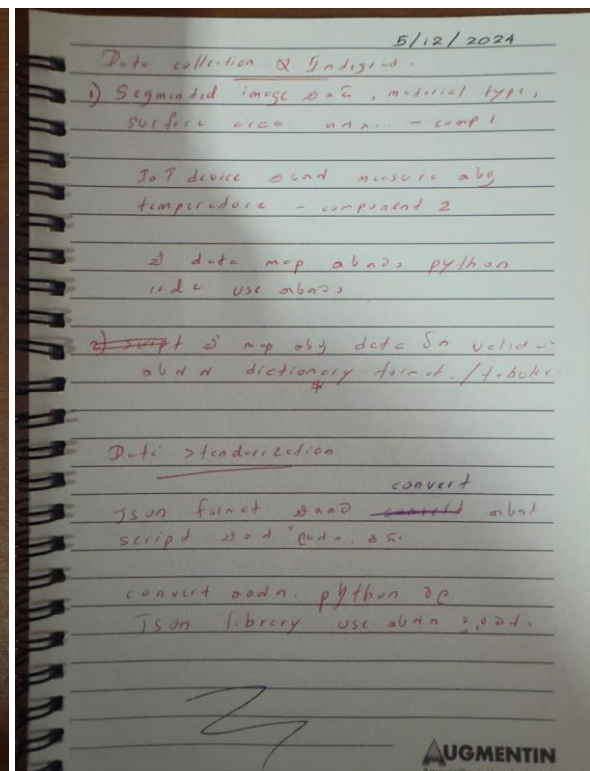


Figure 18: Note 18

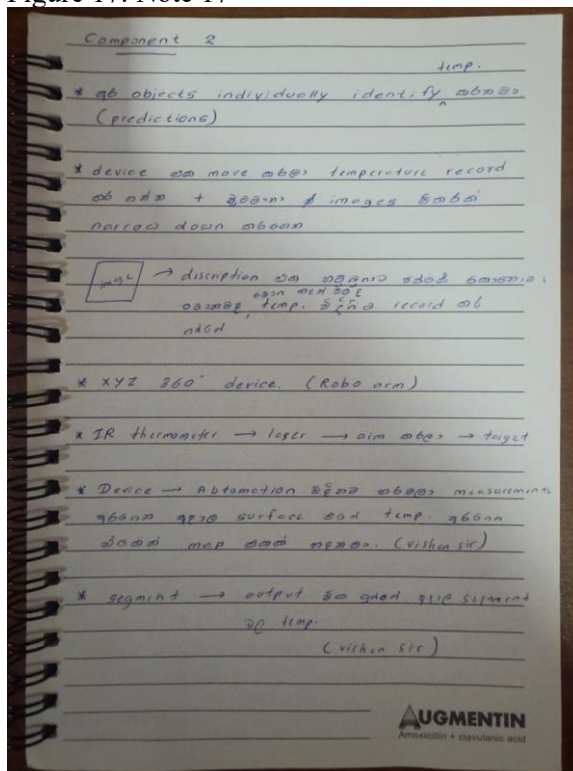


Figure 19: Note 19

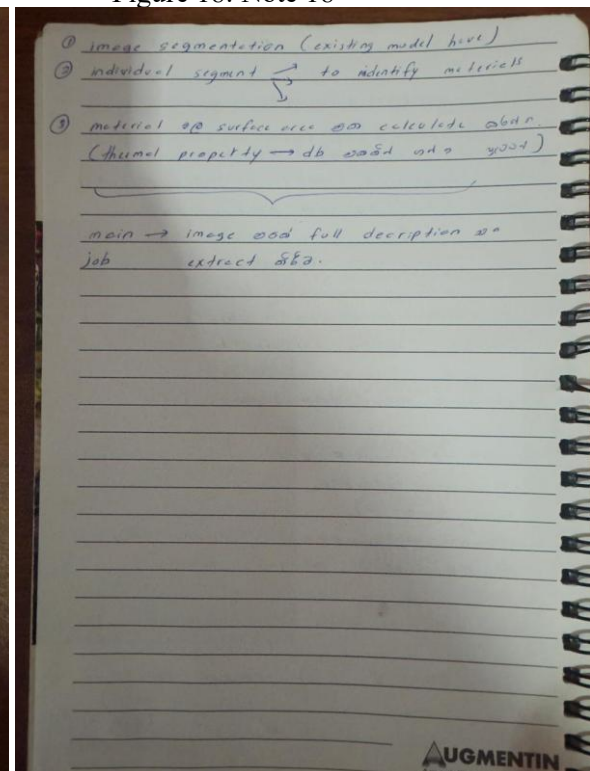
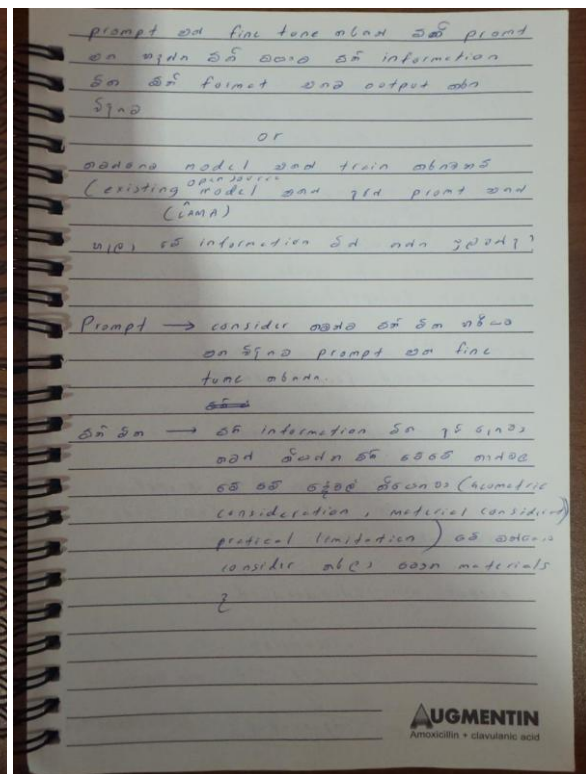
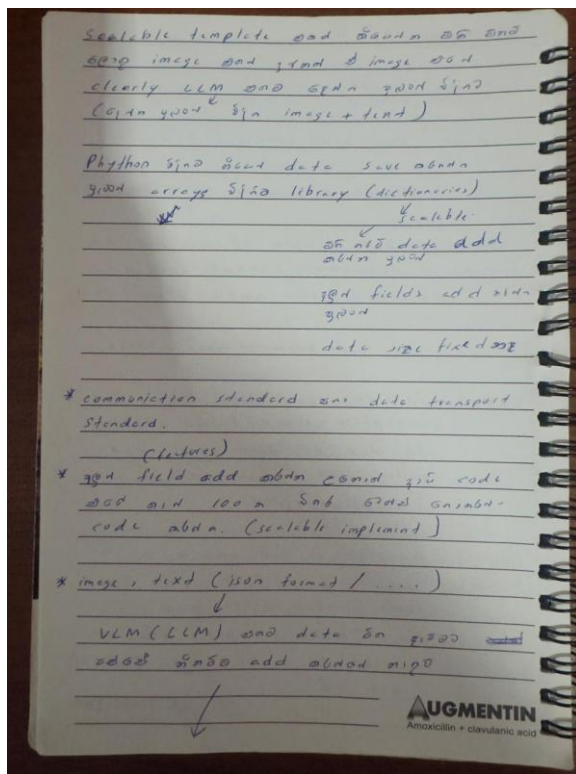
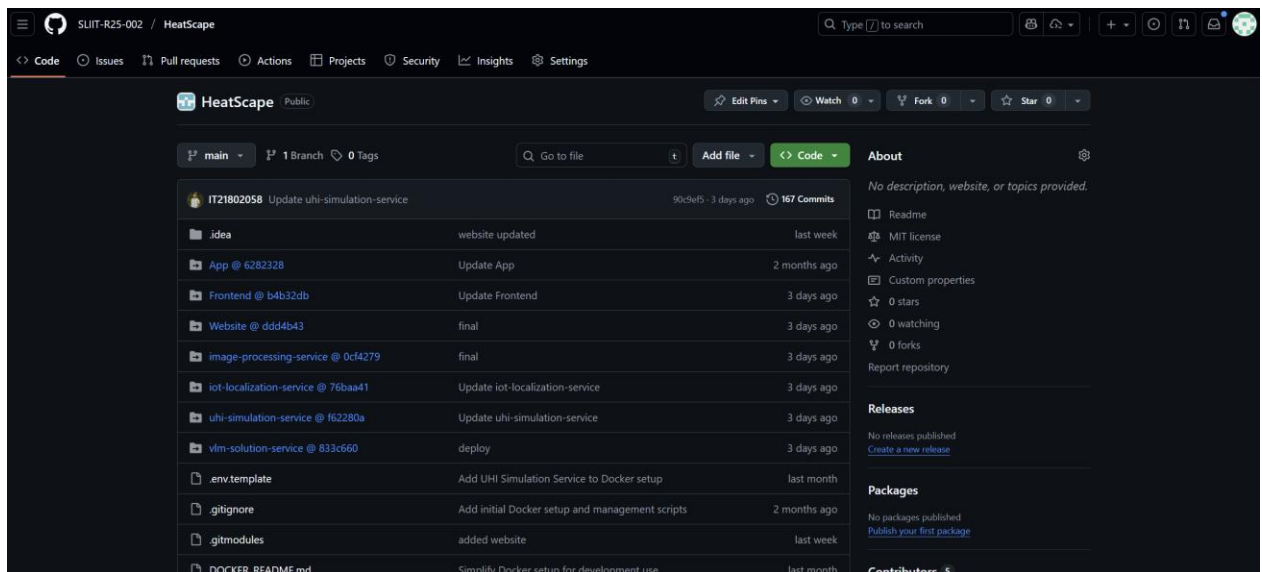


Figure 20: Note 20



## 4. Git Activity History



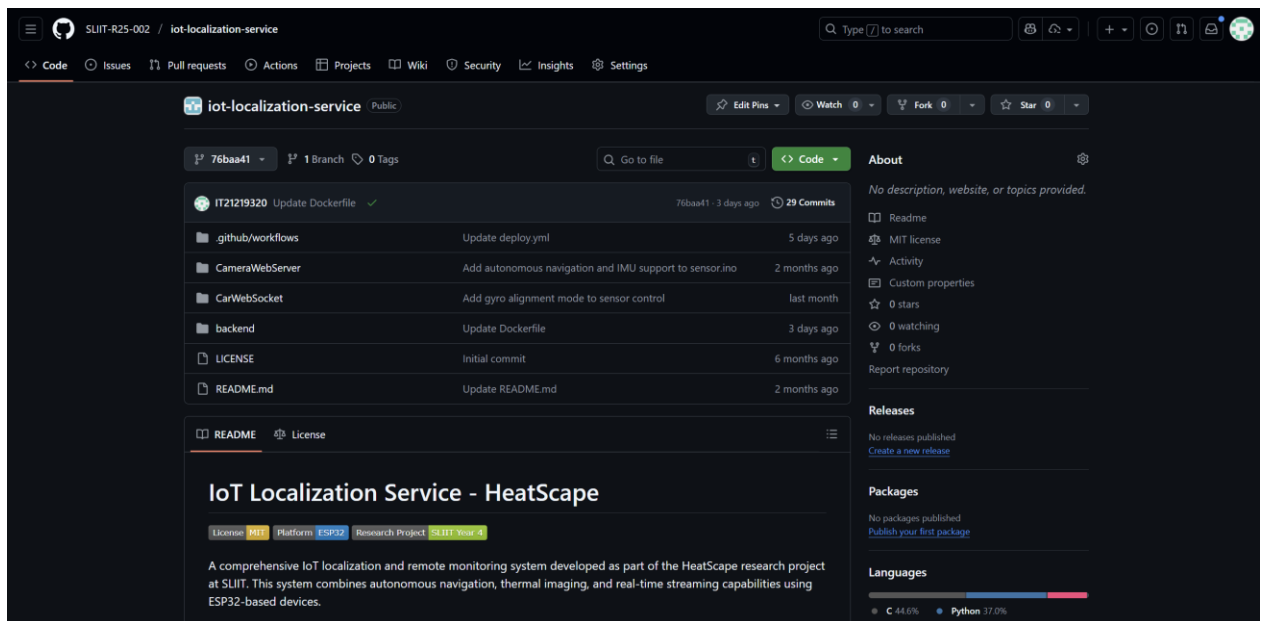


Figure 24: Git Repo (IoT Microservice)

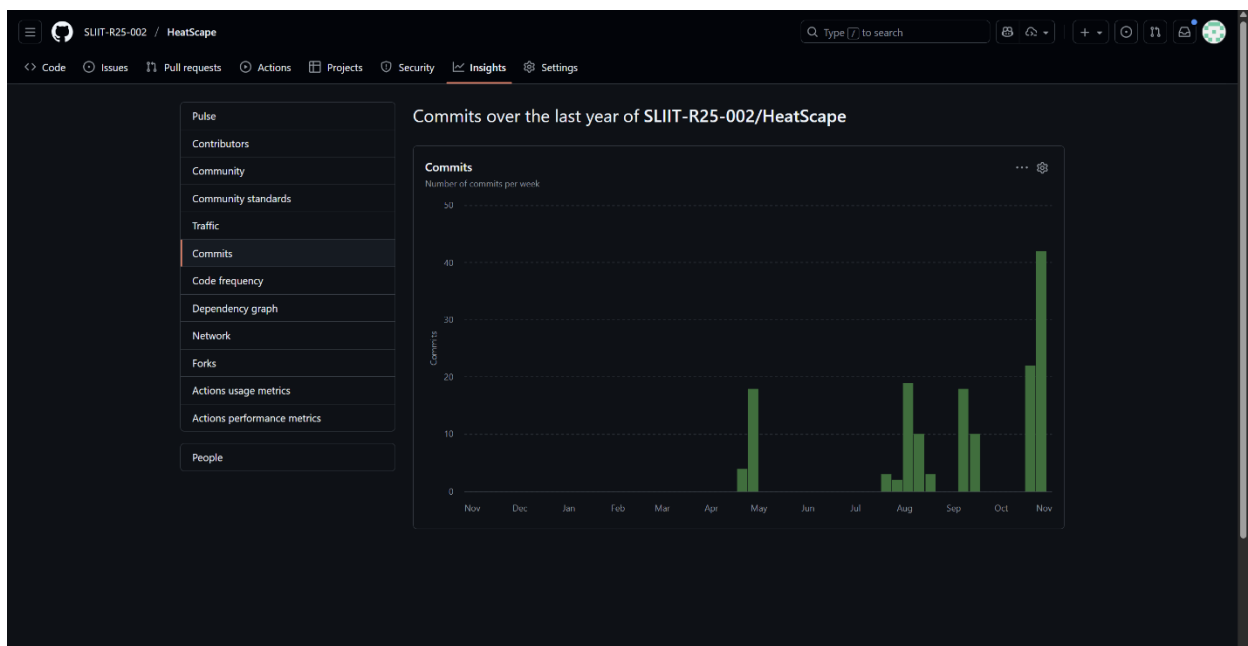


Figure 25: Git Code Commits (Main Repo)





Figure 26: Git Code Commits (IoT Microservice)

## 5. Screenshots of Meetings & Mails

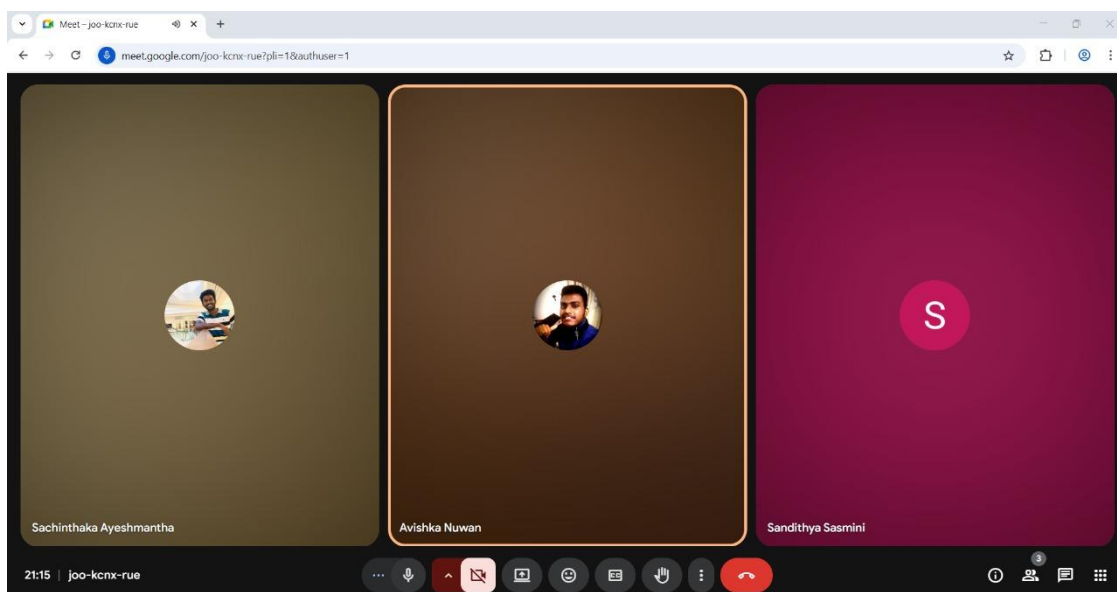


Figure 27 : Group Meeting

<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: P38cs9NU	Oct 28
		+2	
<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 it21256264 ; 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: P38cs9NU	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: Vt9z2M7ui	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: P38cs9NU	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: P38cs9NU	
		+3	
<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 28: 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 ...	Aug 20
		+2	
<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	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  - 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.	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
		+3	

Figure 29: 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: we6uU9rz	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: we6uU9rz	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?	11/28/24
<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: we6uU9rz	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 30: 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 BDAN 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 31: Emails 4

## 6. Gallery



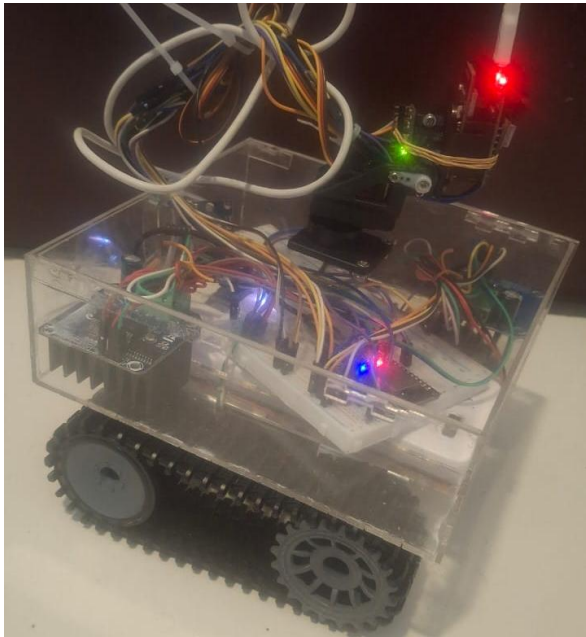


Figure 32: IoT Device (Side View)

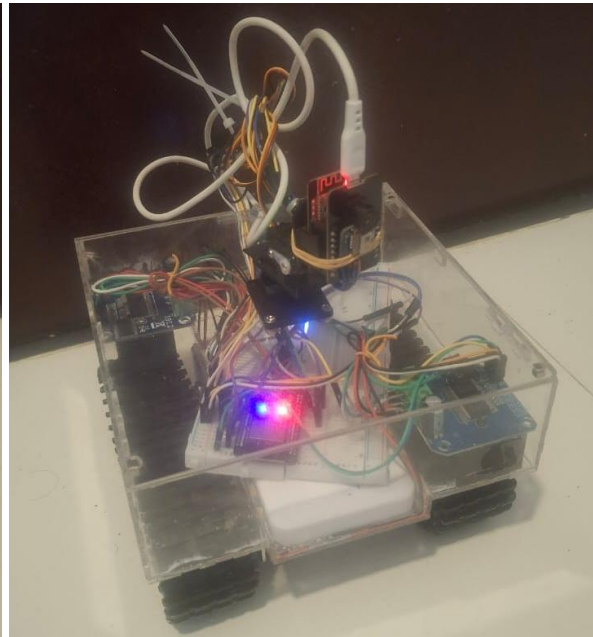


Figure 33: IoT Device (Front View)

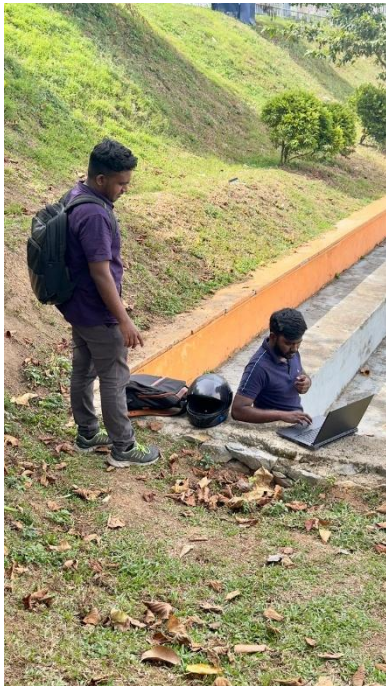


Figure 34: Validation Testing 1



Figure 35: Validation Testing 2



Figure 36: Validation Testing 3



*Figure 37: Final Presentation Completed*