

Sri Lanka Institute of Information Technology

B.Sc. (Hons) Information Technology Specializing in Data Science

Research Project - IT4010




Udbhasa M M S

IT19188928

Logbook

DECLARATION

I declare that this is my own work and this proposal 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.

Name	Student ID	Signature
M M S Udbhasa	IT19188928	

Signature of the Cover- up Supervisor

Date

(Mr. Jagath Wickramaratne)

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July - 2022

Week 1 03/07/2022 - 09/07/2022	Background research on research topics and brainstorming
Week 2 10/07/2022 - 16/07/2022	Field visit to Lady Ridgeway Hospital ENT center to gather information about hearing impairment. Field visit to Lady Ridgeway Hospital Audiology center to observe speech therapy. Discussing with an educator about the educational background of hearing-impaired children
Week 3 17/07/2022 - 23/07/2022	Preparing topic assessment document Review and revise topic assessment document with supervisor Research about existing methods for lip movement capturing
Week 4 24/07/2022 - 30/07/2022	Research about importance of developing linguistic skills at an early age. Adding more content to the topic assessment document based on the findings. Review and revise topic assessment document with group members TAF document submission



August - 2022

Week 5 31/07/2022 - 06/08/2022	Prepare a questionnaire for field visit Field visit to Ratmalana Deaf School Field visit to Ratmalana Audiology Center
Week 6 07/08/2022 - 13/08/2022	Had a meeting with team to discuss about outcomes of field study Experimenting with existing technologies to detect lip movements and human pose (Python) Had a meeting with co-supervisor to clarify some doubts regarding the project.
Week 7 14/08/2022 - 20/08/2022	Discussion on field visit with supervisors Proposal report & proposal presentation planning with team members Progress discussion with supervisor and co-supervisor
Week 8 21/08/2022 - 27/08/2022	Proposal report - individual diagram finetuning with team members Proposal report progress discussion with co-supervisor
Week 9 28/08/2022 - 03/09/2022	Field visit to Ratmalana Deaf School Discussion on field visit with supervisors


September - 2022

Week 10 04/09/2022 - 10/09/2022	Requested permission for a field visit to CEHIC Individual component workload planning with team members
Week 11 11/09/2022 - 17/09/2022	Field visit to Ratmalana Deaf School Draw individual component diagram. 
Week 12 18/09/2022 - 24/09/2022	Requested permission to visit CEHIC for a field trip. Planned workload for individual components with team members.
Week 13 25/09/2022 - 01/10/2022	Writing proposal report Proposal document improvements after review

October - 2022

Week 14 02/10/2022 - 08/10/2022	Writing proposal report Meeting with supervisor and review proposal presentation slides
Week 15 09/10/2022 - 15/10/2022	<p>CEHIC visit Made improvements to the proposal report based on observations during the CEHIC field visit. Video data collected for Lipnet training</p>  
Week 16 16/10/2022 - 22/10/2022	Practice proposal presentation Proposal presentation
Week 17 23/10/2022 - 29/10/2022	Lipnet algorithm retrained using obtained video data. Evaluate Lipnet model performance for given data

November - 2022

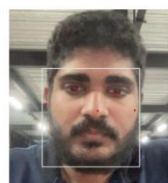
Week 18 30/10/2022 - 05/11/2022	Application flow modifications according to the field visit findings.
Week 19 06/11/2022 - 12/11/2022	Started development of lip detection model. Debug lip detection model
Week 20 13/11/2022 - 19/11/2022	Started developing audio input analyzer. Created an algorithm to compare lip movement results and audio inputs Performance evaluation with local candidates
Week 21 20/11/2022 - 26/11/2022	Parameter tuning to accurately detect lip movements for local users. Improve audio input analyzer to accurately capture local users accent.
Week 22 27/11/2022 - 03/12/2022	Second visit to CEHIC to gather information about the learning methods. Application flow modifications according to the field visit findings 

December - 2022

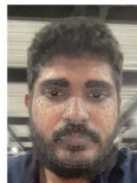
Week 23 04/12/2022 - 10/12/2022	Research alternative models to capture local users accent more accurately than existing model. Develop new model to capture audio inputs
Week 24 11/12/2022 - 17/12/2022	Debug audio input analyzing model. Research techniques that can perform lip detection on device to reduce latency
Week 25 18/12/2022 - 24/12/2022	Performance evaluation of two different models that captures audio inputs. Parameter tuning for better performance in models
Week 26 25/12/2022 - 31/12/2022	Integrate lip detection and audio analyzing models to capture video + audio of the child's pronunciation

January - 2023

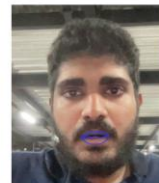
Week 27 01/01/2023 - 07/01/2023	Develop algorithm to score pronunciation accuracy of the child. Build an algorithm to suggest pronunciation corrections based on calculated score. Save scores in database for later usage in level determination component.
Week 28 08/01/2023 - 14/01/2023	Research different ways that can generate phonetically similar words. Phonetically similar word generation model development
Week 29 15/01/2023 - 21/01/2023	Try different approaches to build a fast computer vision pipeline in mobile phones
Week 30 22/01/2023 - 28/01/2023	Continuation of the research on building an on-device computer vision pipeline without server processing
Week 31 29/01/2023 - 04/02/2023	Using TensorFlow-lite and some other libraries built an on-device computer vision pipeline for lip extraction



Face detection




Extract mesh points



Lip detection


February - 2023

<p>Week 32 05/02/2023 - 11/02/2023</p>	<p>Preparation for the Progress Presentation 1 and present in front of supervisors. Modify progress presentation according to supervisor feedback.</p> 
<p>Week 33 12/02/2023 - 18/02/2023</p>	<p>Discuss panel feedback with supervisors and planning how to implement them in the application Background research on new feature addition</p>
<p>Week 34 19/02/2023 - 25/02/2023</p>	<p>Find publicly available datasets that can be utilized for phonetically similar word generation. Model training with new datasets</p>
<p>Week 35 26/02/2023 - 04/03/2023</p>	<p>Testing phonetically similar word generation model Model parameter tuning for better performance in phonetically similar word generation</p>

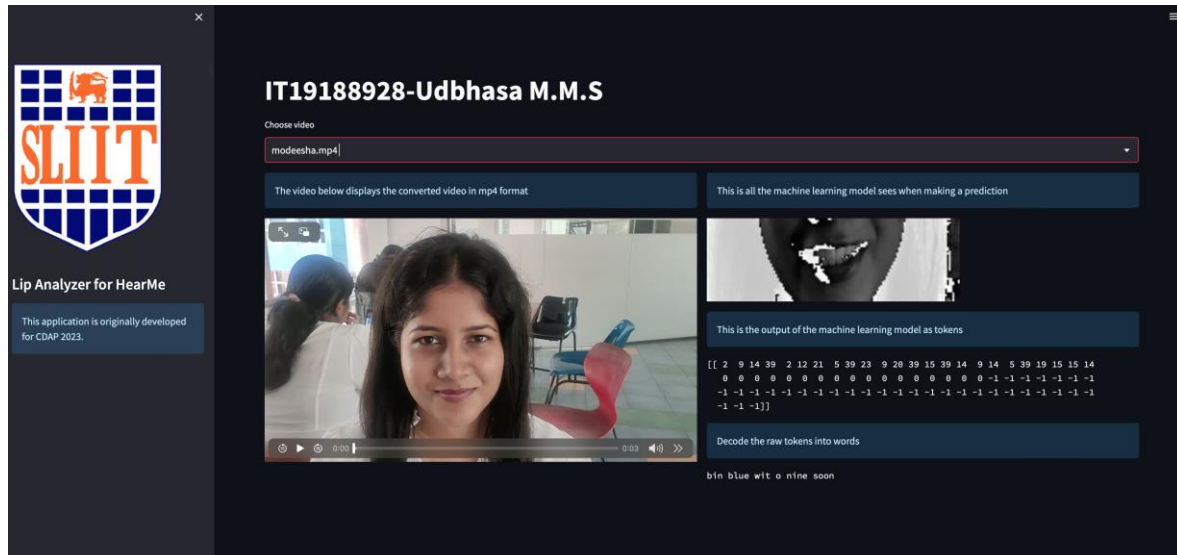
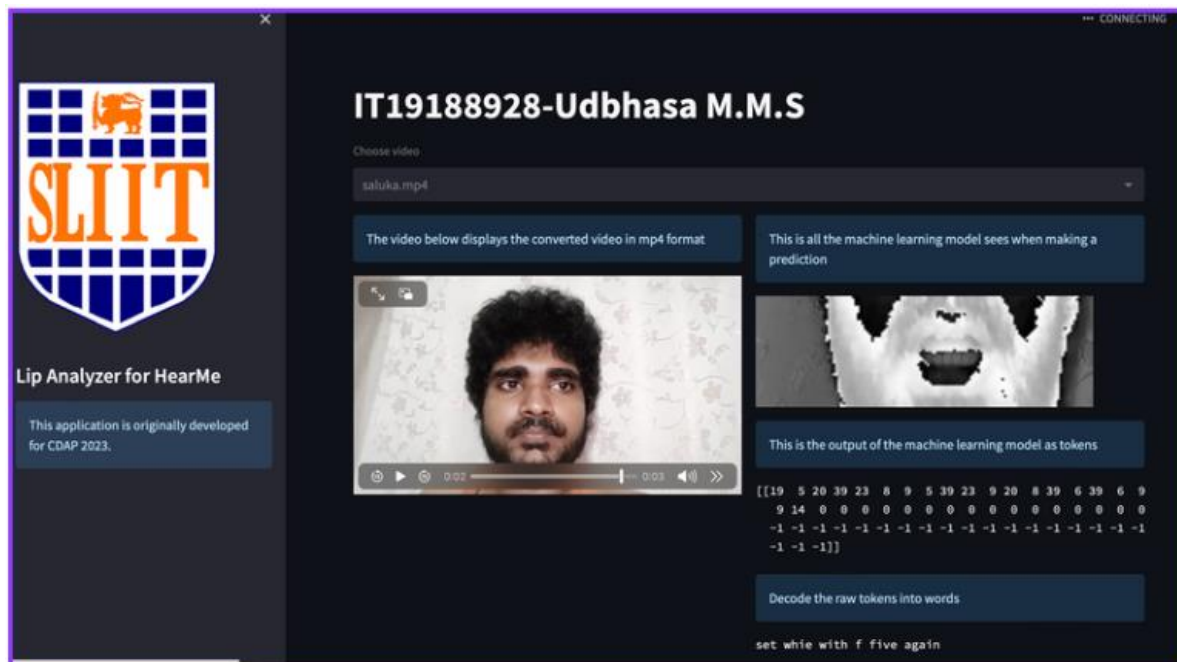
March - 2023

Week 36 05/03/2023 - 11/03/2023	Application UI design with team members App UI development for speech therapy screen
Week 37 12/03/2023 - 18/03/2023	Integration of computer vision pipeline to the backend Deployment of computer vision pipeline to front end
Week 38 19/03/2023 - 25/03/2023	Review the research paper with supervisor. Computer vision pipeline debugging. App front end development
Week 39 26/03/2023 - 01/04/2023	Submit the research paper to conferences. Revise research paper according to the given feedback


April - 2023

Week 40 02/04/2023 - 08/04/2023	Preparation for the PP2 Completed the front end development of the component 
Week 41 09/04/2023 - 15/04/2023	Create a Streamlit webapp for demonstration purpose. App flow testing with real candidates (children)
Week 42 16/04/2023 - 22/04/2023	Preparing the final thesis report Review final thesis with co-supervisor. Progress presentation 2
Week 43 23/04/2023 - 29/04/2023	Final thesis modification Revise thesis according to supervisor feedback

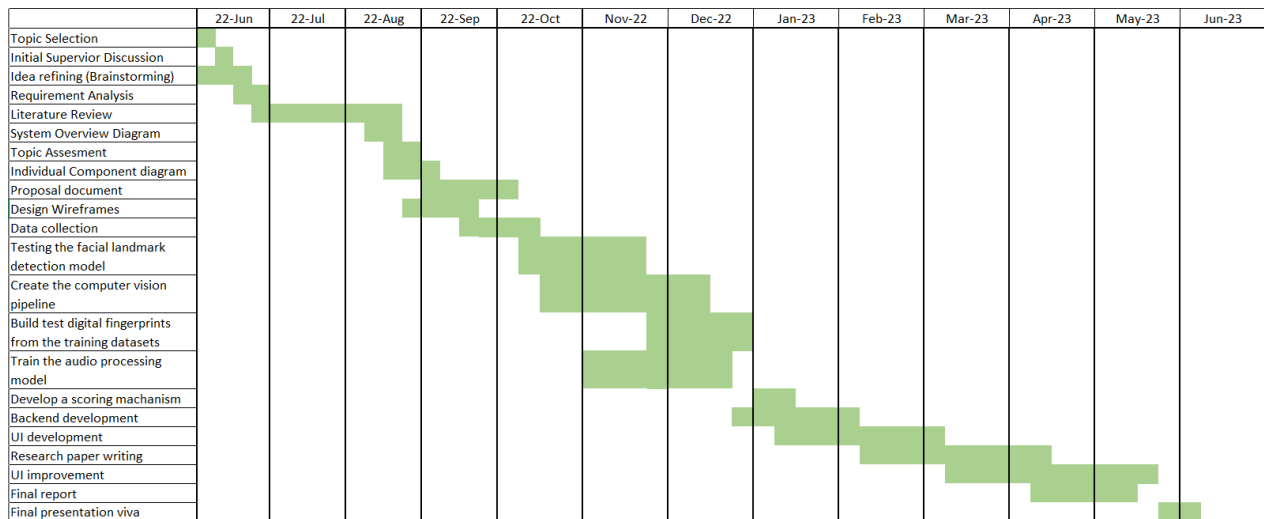
Screenshots of Streamlit web application built for model performance demonstration



May – 2023

<p>Week 44 30/04/2023 - 06/05/2023</p>	<p>Prepare for Final Presentation Application user experience improvements based on user feedback</p> 
<p>Week 45 07/05/2023 - 13/05/2023</p>	<p>User acceptance testing for lip detection and audio analyzing. UX improvements and minor modifications in application UI Final presentation</p>

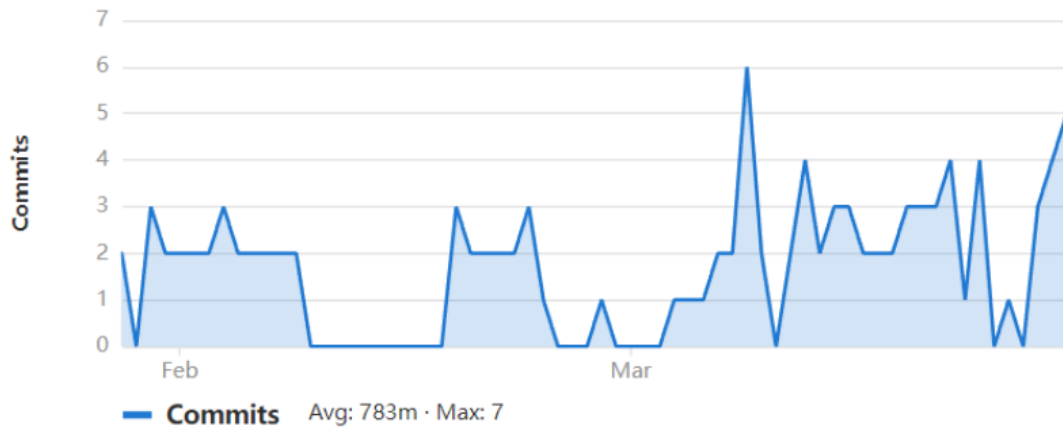
Gantt Chart

































GitLab Contributions

it19188928

77 commits (it19188928@my.sliit.lk)



	script changes Lelkada L L P S M authored 2 months ago	546b6968		
10 Mar, 2023 5 commits				
	model changes Lelkada L L P S M authored 2 months ago	01f97861		
	script modification Udbhasa M M S authored 2 months ago	6d4d4004		
	script modification Udbhasa M M S authored 2 months ago	7be615df		
	resolve conflicts Lelkada L L P S M authored 2 months ago	fd2ee6e1		
	word generation Lelkada L L P S M authored 2 months ago	7e26c6ba		
09 Mar, 2023 6 commits				
	dataset clean script changes Udbhasa M M S authored 2 months ago	7448d8db		
	dataset clean script changes Udbhasa M M S authored 2 months ago	a4535ed9		
	data cleaning Lelkada L L P S M authored 2 months ago	452104ae		
	clustering script Lelkada L L P S M authored 2 months ago	353f995f		

Commit statistics for master Oct 05 - Apr 20

Excluding merge commits. Limited to 2,000 commits.

- Total: **179 commits**
- Average per day: **0.9 commits**
- Authors: **7**

master

22_23-j-18

Commits per day of month

