Enhancing Textbooks using Augmented Reality

Department of CSE
Jyothi Engineering College
Thrissur

June 7, 2021

Department Mission & Vision

Vision

- **Creating eminent and ethical leaders in the domain of Computational Sciences through quality professional education with a focus on holistic learning and excellence.**

Mission

- **To create technically competent and ethically conscious graduates in the field of Computer Science and Engineering by encouraging holistic learning and excellence.**
- **To prepare students for careers in Industry, Academia and the Government.**
- **To instil Entrepreneurial Orientation and research motivation among the students of the department.**
- **To emerge as a leader in education in the region by encouraging teaching, learning, industry and societal connect.**

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Our Team

GROUP MEMBERS

1. **Meera E Thimothy (JEC17CS066)**
2. **Muhammed Raneesh C M (JEC17CS071)**
3. **Naveen P R (JEC17CS073)**

GUIDE

1. **Mr. Shaiju Paul**
   Assistant Professor, Dept. of CSE

Github Repository Link
https://github.com/iamrnsh/Group-16

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Project Abstract

1. Augmented Reality based Android app that detects the 2D images in the textbook and augments contents like 3D models, videos etc.

2. Providing study materials like notes, presentation, textbooks, etc. in an organised way.

3. The system aims to:
   a. Help students to understand the concepts in the textbook in a short time

   b. To promote self-study among student

   c. To ensure interaction of students in the study process

Project Objectives

1. Provide better **Customer Experience** by improving UI/UX of the system
2. Reduce the loading time for modules and thus improve the **Performance** of the system
3. Only necessary information is collected from the user and it only stored in their local devices. Thus ensures the **Privacy.**
4. Collect proper feedback from the users to improve the **Quality** of the system.

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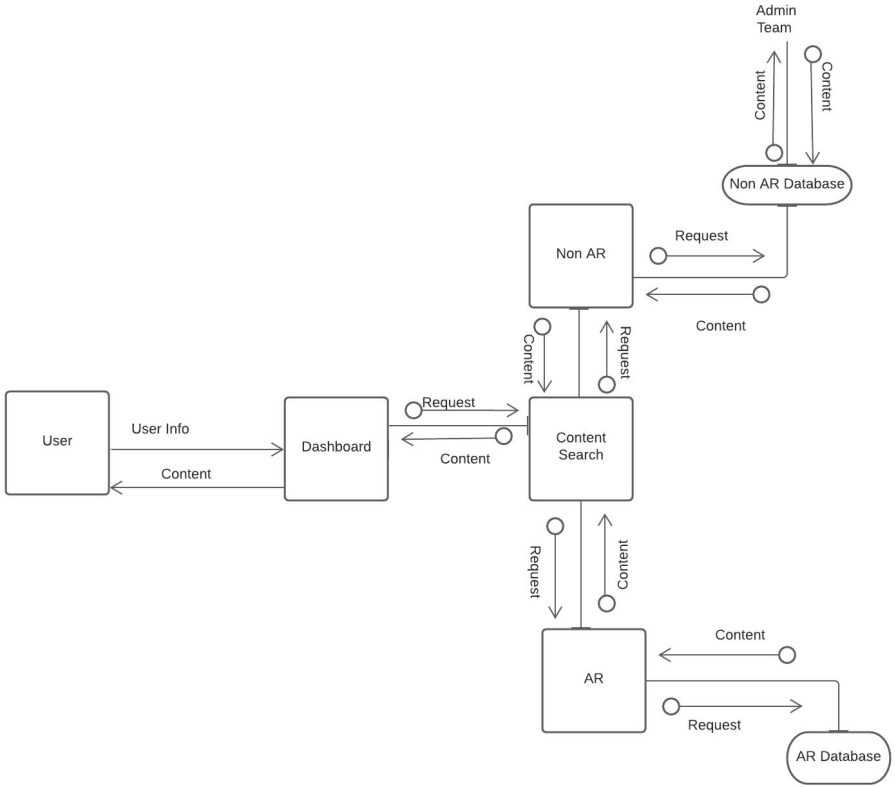
List of Literature Papers Reviewed

1. **"Education and knowledge based augmented reality (AR)"** by Hamada, Salwa.
2. **"AR lab: Augmented reality app for chemistry education"** by da Silva, Bruno Rogério, J. H. Zuchi, L. K. Vicente, L. R. P. Rauta, M. B. Nunes, V. A. S. Pancracio, and W. B. Junior.
3. **"Web AR: A promising future for mobile augmented reality—State of the art, challenges, and insights."** *by* Qiao, Xiuquan, Pei Ren, Schahram Dustdar, Ling Liu, Huadong Ma, and Junliang Chen.
4. **"ARKit and ARCore in serve to augmented reality."** by Oufqir, Zainab, Abdellatif El Abderrahmani, and Khalid Satori.
5. **"Marker tracking for video-based augmented reality."** by Gao, Yan-Fei, Heng-You Wang, and Xiao-Ning Bian.

STRUCTURE CHART



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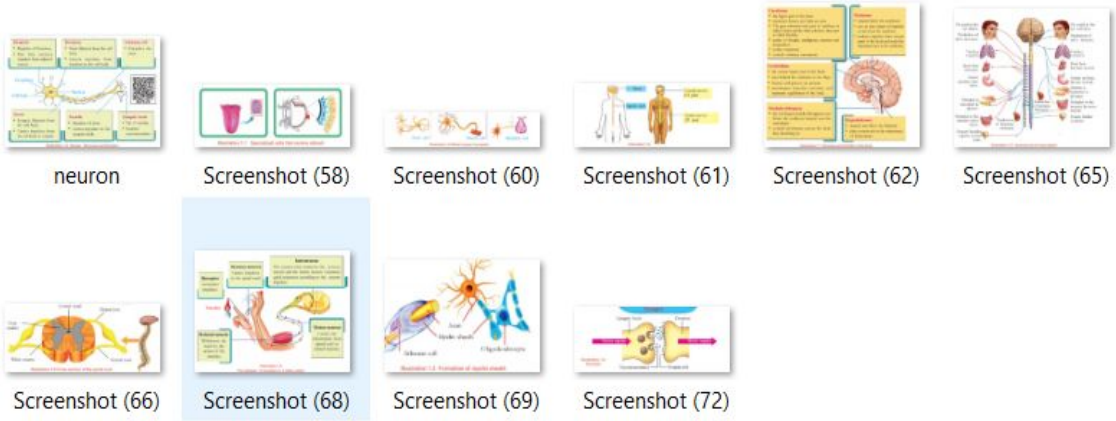
Implementation Details

1. Collecting the images of illustration from the textbook

   By Meera E Thimothy

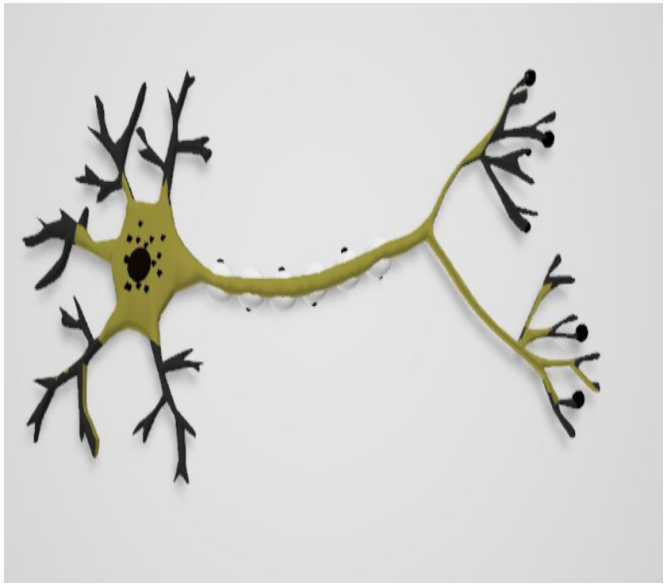


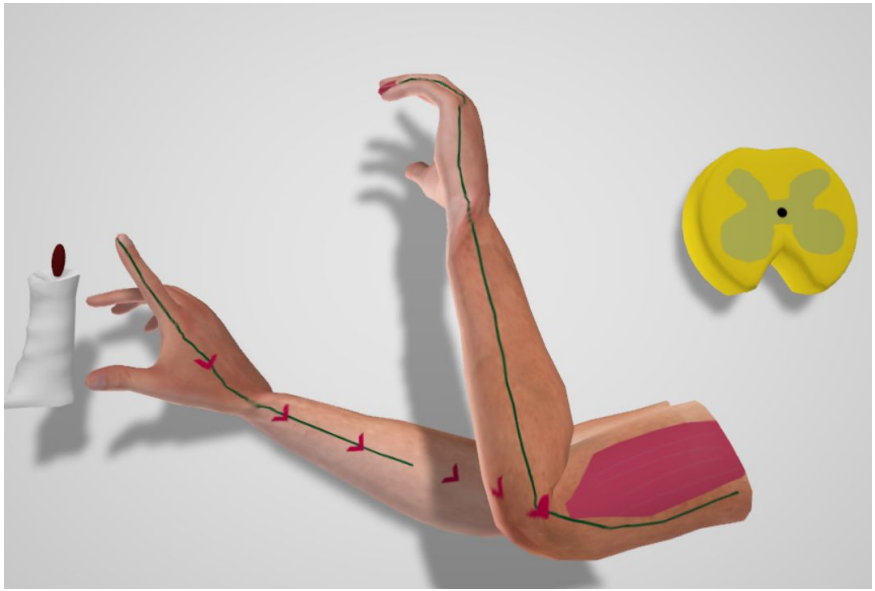
2. Collecting 3D Objects

By Meera E Thimothy

3. Creating 3D Models Using Maya Designing Software

By Meera E Thimothy





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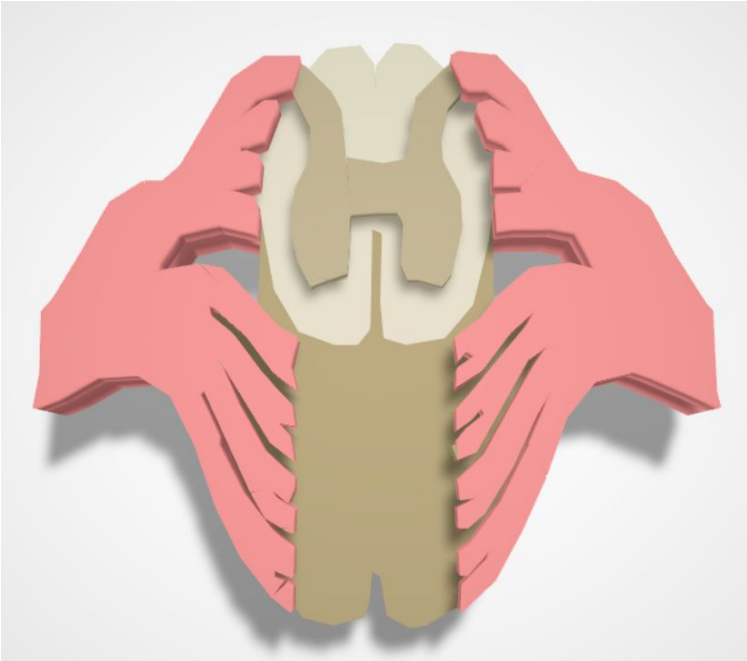

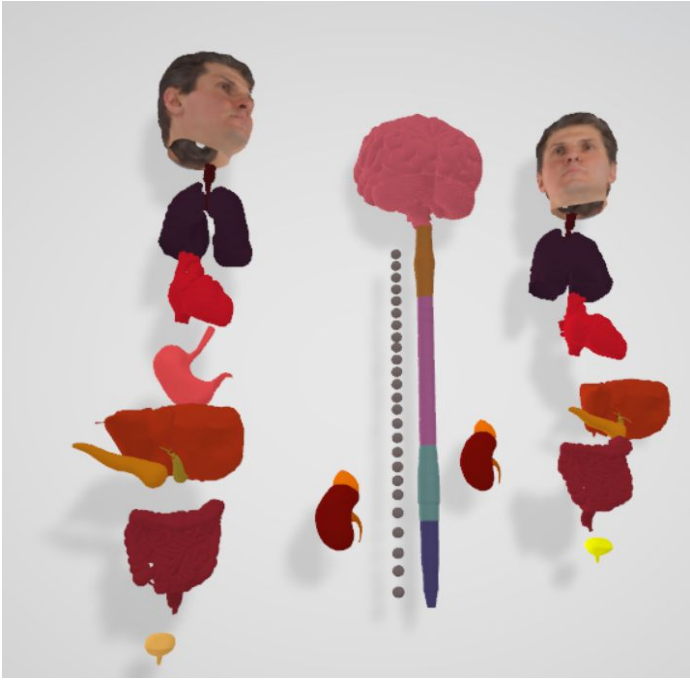

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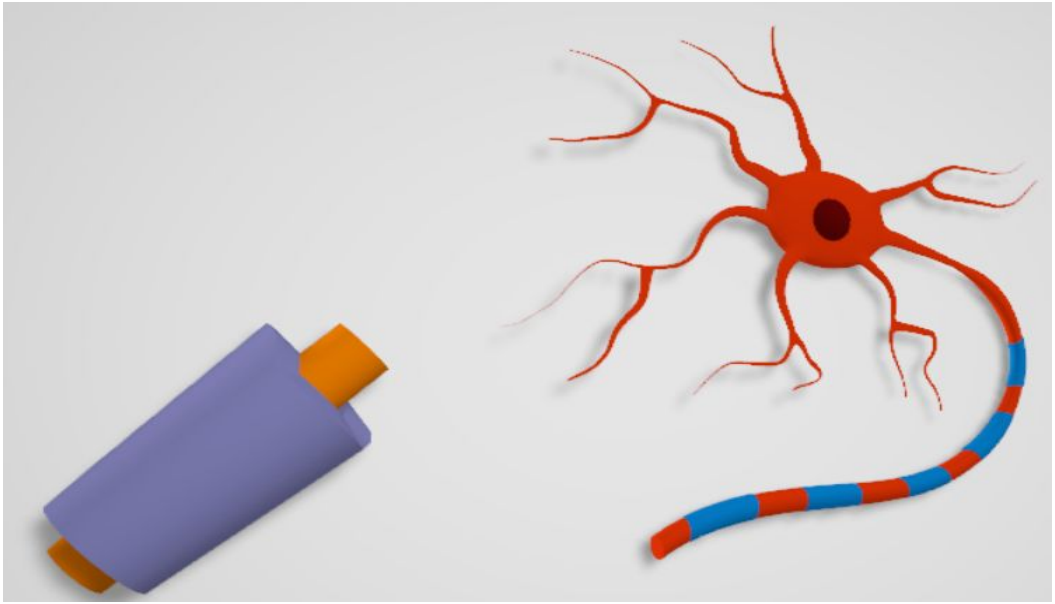


Implementation Details

4. Collecting websites contains various study materials

   By Meera E Thimothy

   https://www.hsslive.co.in/

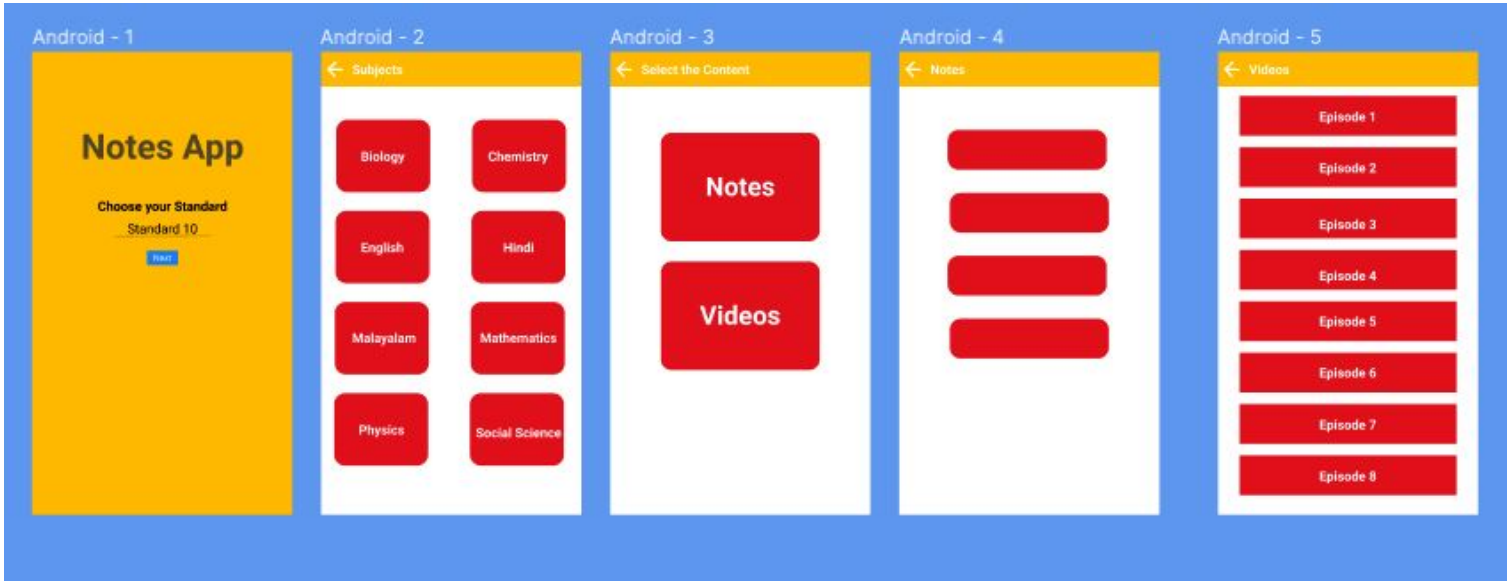
   https://www.selfstudys.com/state-wise/kerala/class-10th

   https://www.educationobserver.com/kerala-sslc-study-materials-notes/

   https://samagra.kite.kerala.gov.in/

5. Design UI of the Notes App in Figma

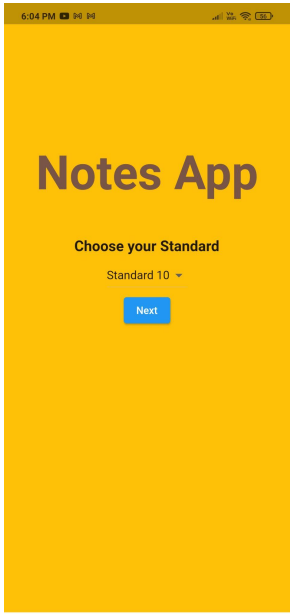
By Meera E Thimothy and Naveen PR

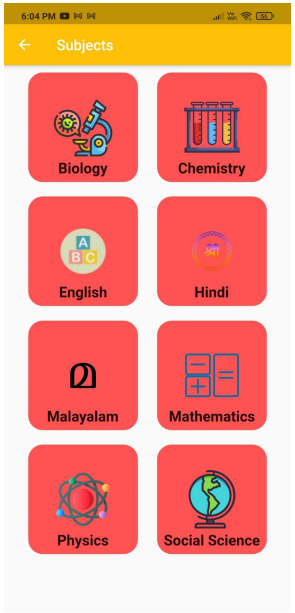


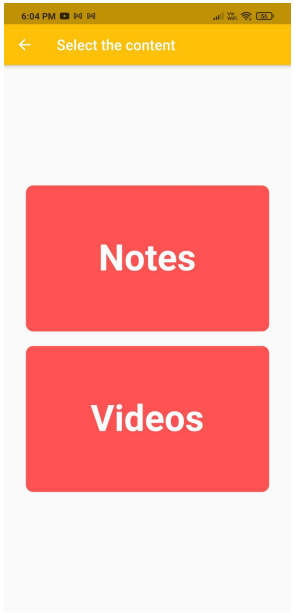
http://bit.ly/notesappfigma

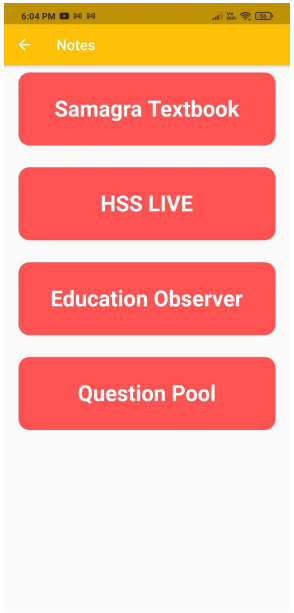
6. Implementing Non-AR app in Flutter

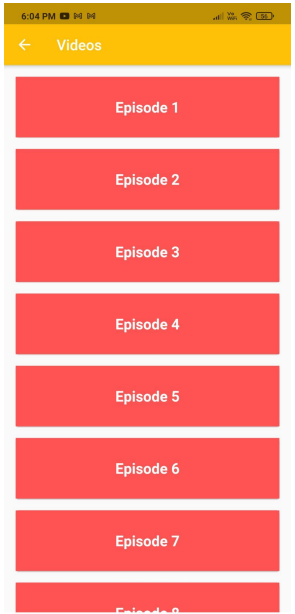
By Naveen P R and Muhammed Raneesh





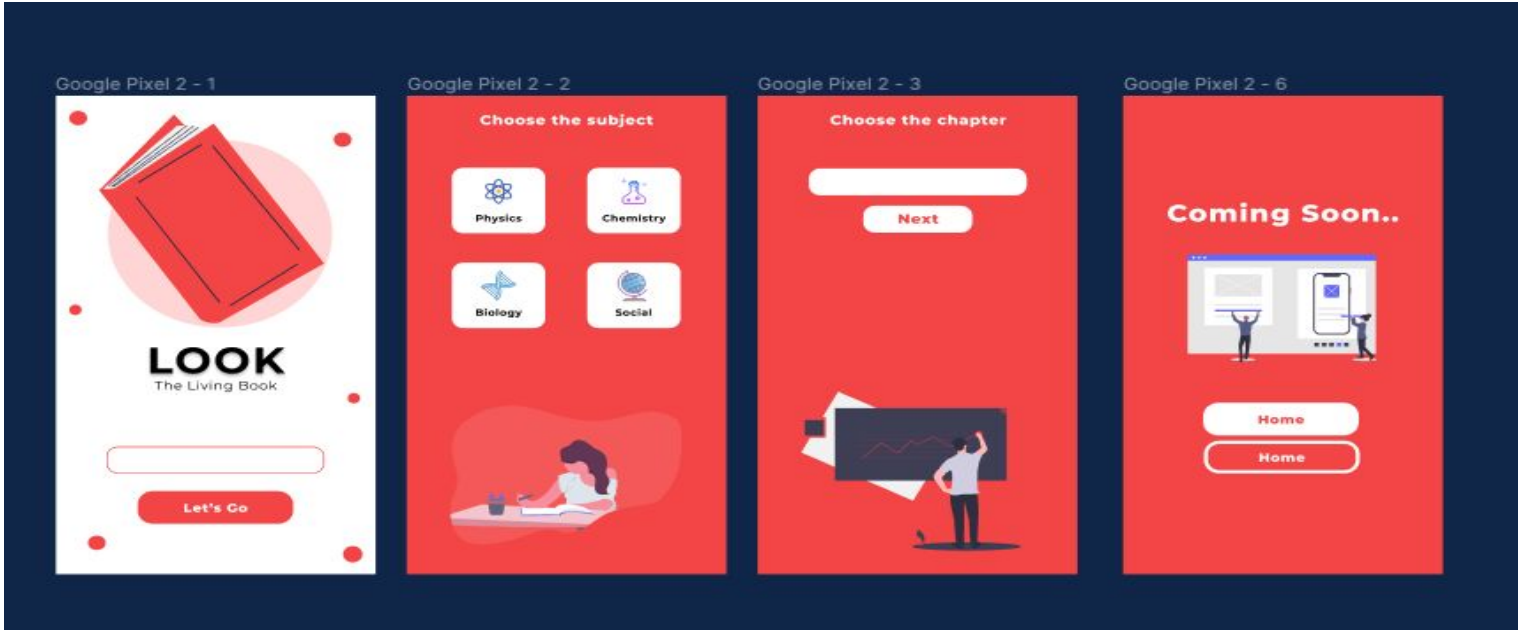






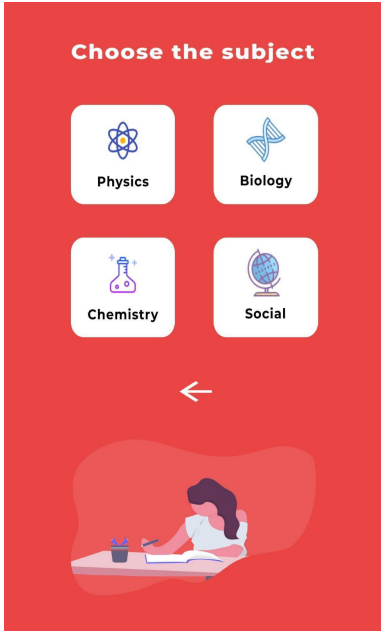
7. Designing AR app UI in Figma

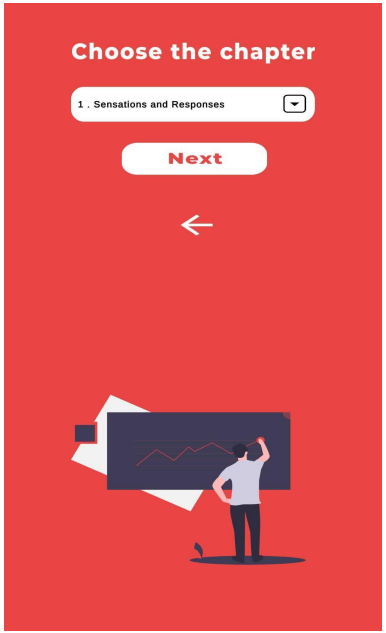
By Muhammed Raneesh

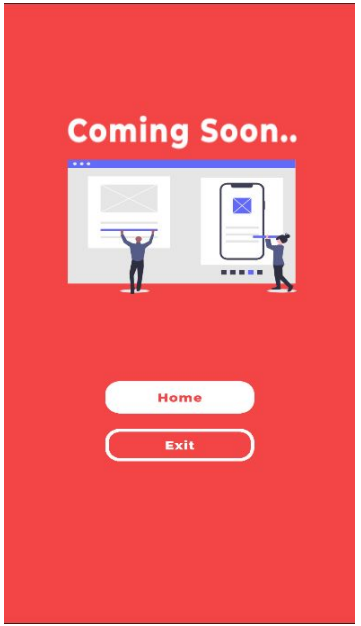


8. Implementing AR app in Unity 3D

By Muhammed Raneesh







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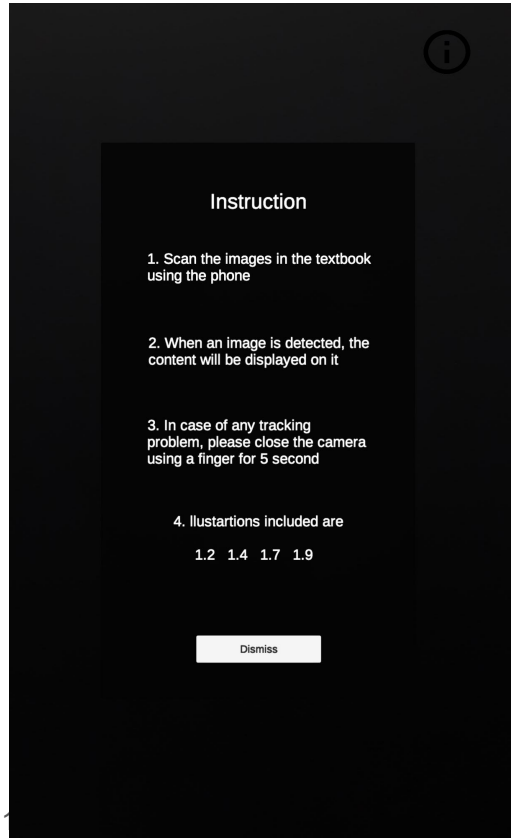

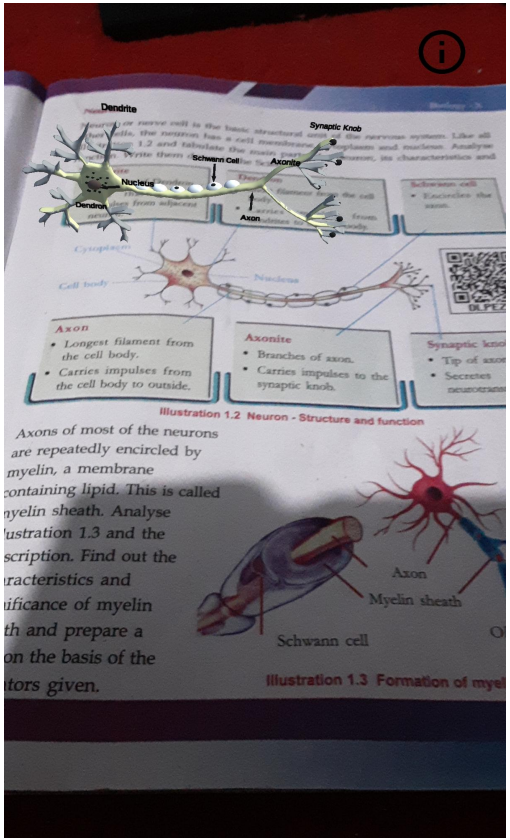

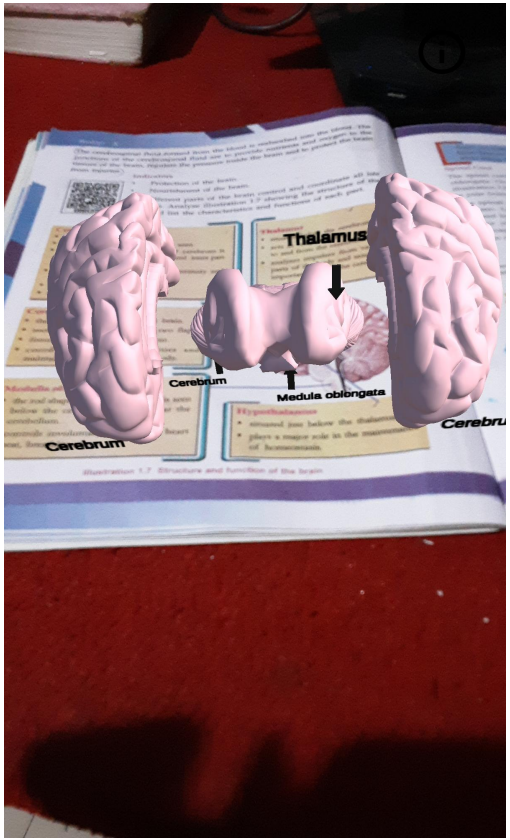

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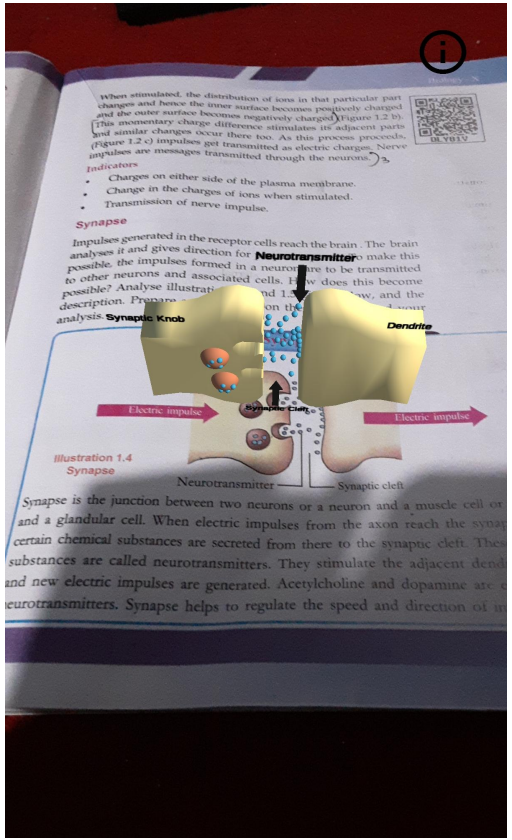

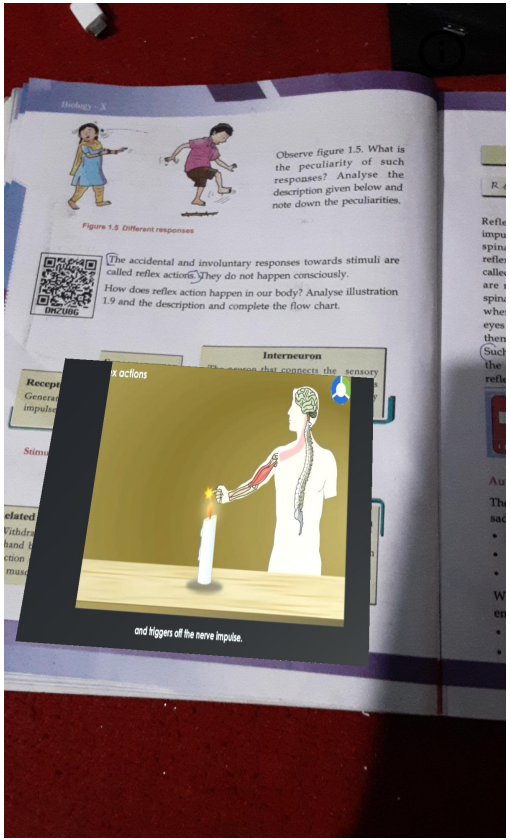

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Implementation Details

9. Working of Non-AR app

Implementation Details

10. Working of AR app

Future Enhancements

1. Add more AR and Non-AR contents.
2. Web AR version of our application.
3. Platform for students to share study materials.

CONCLUSION

1. The UI of the both application completed
2. 3D models and video lesson are collected from various website
3. The UI and AR functionality of AR app implemented
4. The UI and flutter development of NON - AR app implemented

REFERENCE

1. Riya Aggarwal and Abhishek Singhal.-"Augmented reality and its effect on our life" in 2019-2020 International Conference on Intelligent Systems and Computer Vision (ISCV),pages 1–7. IEEE, 2020.

2. Xiuquan Qiao, Pei Ren, Schahram Dustdar, Ling Liu, Huadong Ma, and Junliang Chen."Web ar: A promising future for mobile augmented reality—state of the art, challenges, and insights.",Proceedings of the IEEE, 107(4):651–666, 2019

3. Yan-Fei Gao, Heng-You Wang, and Xiao-Ning Bian - "Marker tracking for video-based augmented reality" in 2016 International Conference on Machine Learning and Cybernetics(ICMLC), volume 2, pages 928–932. IEEE, 2016.

4. Salwa Hamada - "Education and knowledge based augmented reality (ar)", in Intelligent Natural Language Processing: Trends and Applications, pages 741–759. Springer, 2018.

5. Zainab Oufqir, Abdellatif El Abderrahmani, and Khalid Satori - " Arkit and arcore in serve to augmented reality" in 2020 International Conference on Intelligent Systems and Computer Vision (ISCV), pages 1–7. IEEE, 2020

Thank You

Any Query?