



Venkateswara Rao Appalabattula

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Project Portfolio 2022

"I certify that the work included in this portfolio is my own original work. Work included which was conducted as a part of a team or other group is indicated and attributed as such - the other team members are named and a true description of my role in the project is included."

2-6 pages

Web
Portfolio
personal

7-11.

Skill-e-Labs
internship NDA*

12-15.

Suraksha
Device
research publication

16-19.

AUMS
Re-design
personal

Web Portfolio

“ Worried was I, as months passed by,
carrying stardust, my work left behind,
It hit me then, I shall use my ken,
to help the glitter, it must summon. ”

Date: August 2022 - present

Platform: Desktop, mobile and tablet

Purpose and goals:

To organize the scattered and meticulous nature of my work and presenting it clearly. Furthermore, the purpose of this project is to create a readable, accessible and responsive website to showcase my future work while learning front-end programming.

Stakeholders:

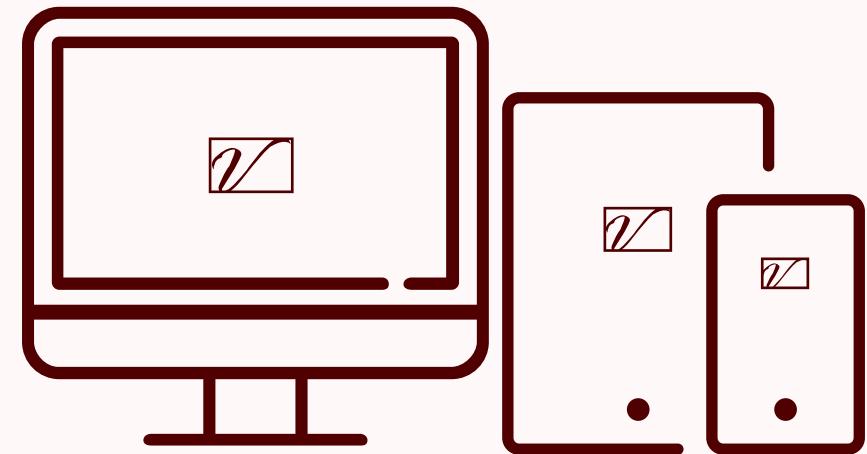
Admission committee, Potential employers and collaborators.

Role:

UX Design, front-end development.

Tools used :

Figma, HTML, Custom CSS, git and github-pages.



Site URL:

venkatappalabattula.github.io

General Research

Observations from other's portfolios:

- Easily accessible projects entice further exploration.
- In order to make the site easy to understand, hierarchy is followed consistently and emphasis is used when necessary.
- Complex aspects are well organised and visual aids such as scrollable containers and animations are used to represent transitions in design.
- Text is visible, readable and well spaced
- White space is used to create an extra presentation like experience
- A designer's personal flair is reflected in his or her use of design language. A site with 3D elements gives a clear indication of a person's interest in 3D.



jermshaw.com



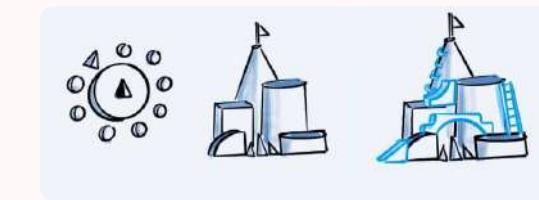
sebastien-gabriel.com



austinknight.com



[Yatrik](#)



jermshaw.com

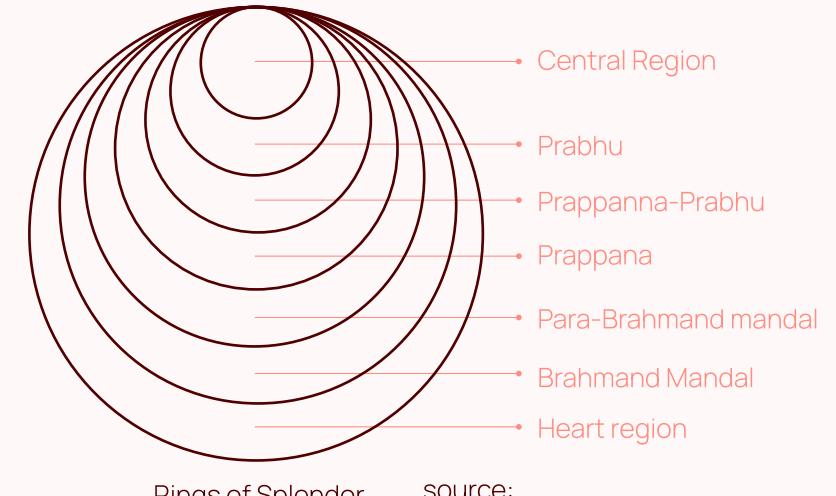


yatrik.design

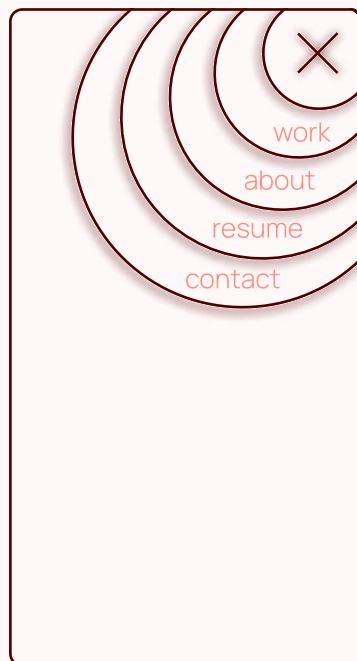
Experiments:

context:

To leverage the power of writing my own code, I conducted a personal introspection to come up with a relevant symbolic theme. Early creative expressions in me, were confined to my Heartfulness ashram. The simplicity inspired me to incorporate one of its philosophies into the design of my site.



wireframes:



The screen's touch was intended to mimic a droplet of still water. Concentric circles forming a ripple if looked at laterally look very similar to the Rings of Splendor,

limitations and drawbacks :

- Visually unappealing when the design is responsive .
- As a beginner front-end developer, implementing complex designs and transitions would not allow me to focus on the presentation of deliverables.
- Lack of user research to know if a novice is overwhelmed to navigate.

Approach:

To transcend the attempted interface experience into a responsive and easily understandable site while prioritizing the deliverables , I focused on maintaining a familiar design while adding distinct elements.

deliverables:

- Glimpses of projects upfront
- About me section
- Easily downloadable Resume
- Contact details
- In depth work case studies.

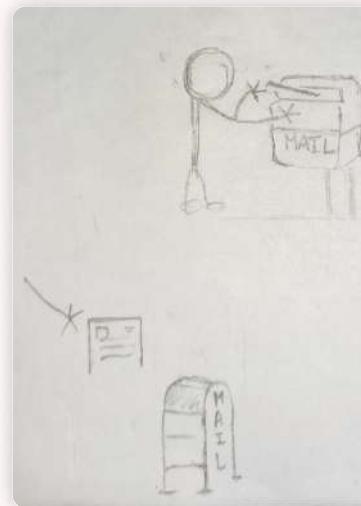


About me section

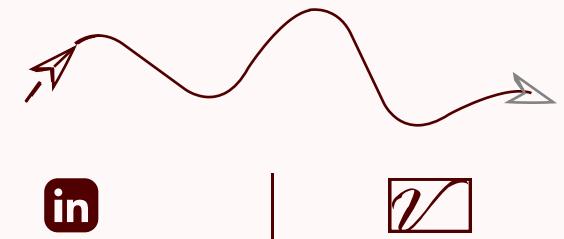


experience and tone :

- simple and elegant
- Fluid interactions and motion effects
- Easy to find and easy to read
- unique display of personal creativity



Connect section



message svg moves from social links to the logo , on scroll

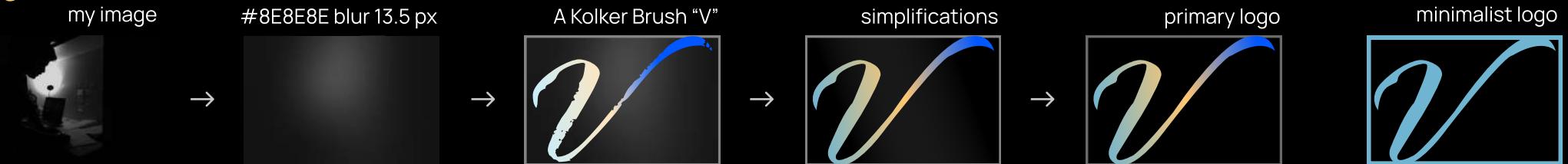
distinctive features:

- doodles
- custom logo
- svg animations and svg scroll effects



Final results :

Logo:



Color scheme:



Font: **Noirden** Sans-Serif family

Screens:

The portfolio website is shown across four devices (Desktop, Mobile, Tablet, and Desktop again) with annotations explaining its features:

- Landing page**: Shows a hero image of a person working at a desk, a title "I'm Venkat.", and a bio: "A product and UX designer based in Hyderabad, India. I emphasize on emotional, functional and elegant design." Includes a "Go to Project" button.
- Projects section**: Shows a card for "Suraksha Device" with a title, bio, and a "Go to Project" button.
- Mobile navigation menu**: Shows a sidebar with "Work", "About", "Resume", and "Contact".
- Case-study chapterwise navigation menu for readability**: Shows a horizontal navigation bar with "Work", "About", "Resume", and "Contact".
- Fully responsive- Desktop Version**: Shows the desktop version of the website with the same layout and navigation.
- Clickable breadcrumbs**: Points to the breadcrumb trail in the mobile and desktop versions.
- Mobile navigation menu**: Points to the sidebar in the mobile version.
- case-study completion**: Points to the progress bar in the case-study section.
- chapter completion**: Points to the arrows indicating progress in the case-study section.
- Nav bar also acts as breadcrumb indicator**: Points to the navigation bar in the desktop version.

Skill-e-Labs

Context: Skill-e-Labs is a government initiative to foster vocational training by building 3D virtual labs for children of sixth to twelfth grade.

Date: March 2022 - August 2022

Platform: Desktop, mobile and tablet

Purpose and goals:

To create an easily understandable, scalable and consistent user interface that can help children navigate the virtual lab environment for around 700 of government approved labs, spanning across various sectors such as Agriculture , Engineering and Business .

Stakeholders:

Children and adults from ages 10 and above. Users who are novice as well as well verse with virtual labs

Skills used :

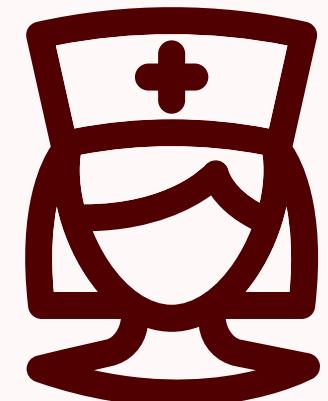
UX Design, User Research, 3D and 2D Testing

Tools used :

Figma, Unity 3D.



Mechanic



Nursing

Non-disclosure Agreement :

Can not disclose project and syllabus related information

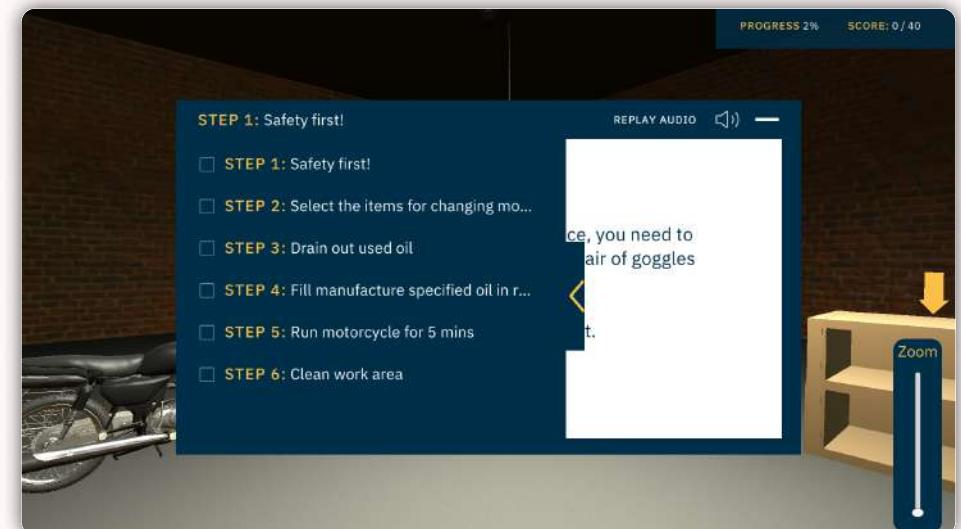
Existing Designs and Deliverables:

Deliverables:

- User Interface should be usable on mobile, tablets and PC.
- The design should stay mostly consistent with the need of minimal changes in support of variety of labs present
- Essential contents :
 - a. Step number and Step name
 - b. Step instructions
 - c. Progress bar
 - d. Score
 - e. Mute audio and Replay audio options
- The interface should not use screen space to enable an immersive experience
- Text should be clearly visible and readable
- Every element must be designed to handle dynamism , for example: providing enough space for accommodating more steps and more badges , so that the Interface stays consistent



Existing UI followed a scattered approach , which makes the remaining screen space feel congested.

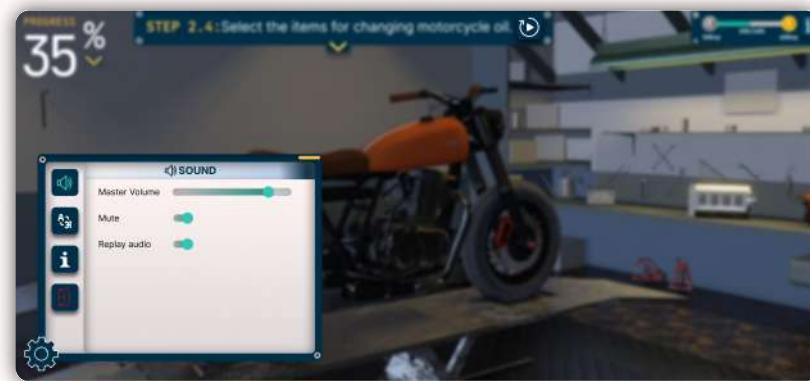
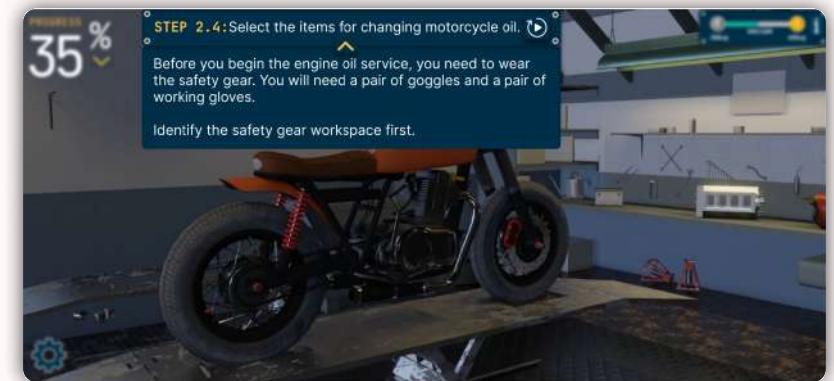
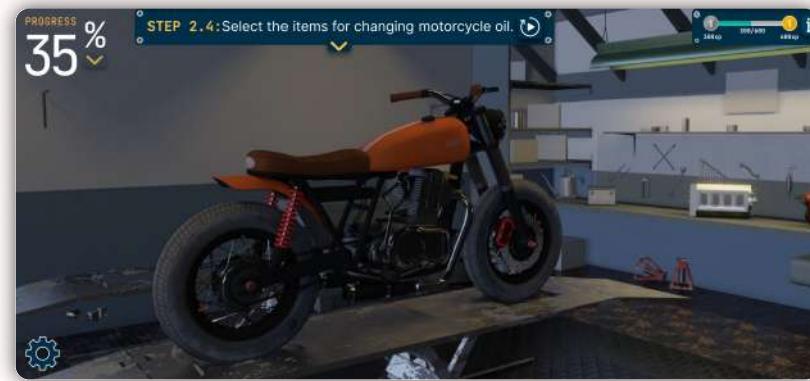


Clicking on the step name opened step instructions which also contained the list of all steps. Progress is represented in percentage, zoom slider is also separated to the side.

My Designs:

Changes:

- Did comparative research with a very similar apps named “Labster” and other garage games.
- Gamification elements were studied to simplify navigation and help the user’s information retention , the app “Retro Garage” was studied as it was also built on unity 3D.
- UI elements were pushed to the top to enhance thumb finger interactions with the Interface and to allow a more clutter free environment.
- Dedicated popouts for progress and step instruction were provided to add an ease for access
- Introduced the settings menu to organise and group all settings for any further labs.
- Tried to make the UI more appealing for a younger audience.



Gamification elements:

Score: Based on in-game MCQ answers.

Badges: Based on in-game tasks and achievements.



Testing:

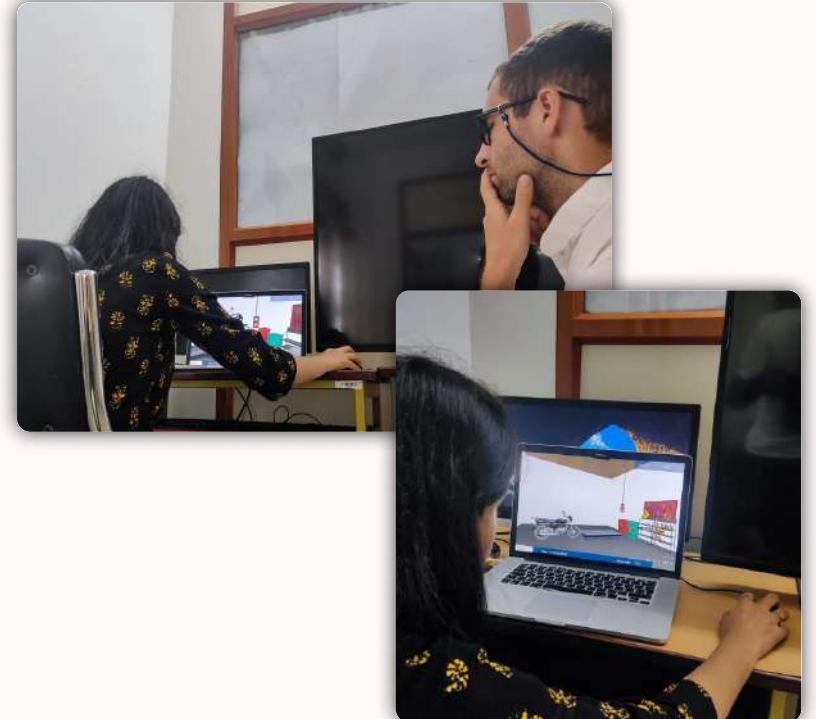
How UI testing was performed:

- All the questions used in testing were created to observe, and validate instinctive nature of the user.
- The study was done on 20 students from ninth grade. To observe all the micro-interactions , students were called into the testing room one by one.

Questions:

1. What is the name of the task being performed as of now?
2. Name step number # 1
3. Check the instructions for the current task - If you were looking for instructions on what to do, where would you expect to find it?
4. Mute the audio of the game? - What do other settings in the volume menu represent?
5. Change the Language of the UI - If you were looking to change the language, where would you expect to find it?
6. What is your current score - What does the bar in top right corner represent? - If you were looking for a score, where would you expect to find it?
7. What is the name of the badge that you currently have?

..... 13 questions more..

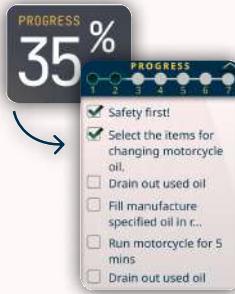


Observations:

- The hit-box of small dropdowns were not properly visible and accessible
- The progress as a percentage would not give insight that the steps menu is related to it .
- The scoring system was very confusing .
- Step numbers in decimels did not imply that the decimels mean substeps.



Iterations and Final Design:



- Upon discovering that the evidence of progress as Percentage serves no purpose to the users. as, though one remembers the percentage it does not let the user track their step number, hence progress is was changed to display step numbers directly.
- Small hit-boxes of each menu to expand were removed making the entire menu clickable, which also enables ease of use in mobiles.



- A novice user might not understand the meaning of an icon, to make icons more easily understandable all icons were labelled.



- Decimals in Step numbers served no cognitive meaning hence decimals in step were removed to show only the step number and the step and sub step also are clearly shown, hierarchical emphasis was put on the sub step as it is the sub step, but to indicate the main-step yellow colour was used to give out an "essential" expression.



- The badges menu and the badges itself were drastically changed, the badges now are specific to each achievement as this promoted customizability of the badges for each task of each lab.
- The menu was made scalable , more the number of badges, they can just be added to the badge menu like a grid, and if the number of badges are lesser then the badges increase in size by a factor of 0.3 and again divide themselves in a grid like system .



- Earlier the progress bar failed to indicate the user how many badges were present in the lab and it was hard to track how many achievements were achieved, another issue was it is hard to understand for a novice user.
- A flat layout of the badges solved two problems, the user can now know how many badges they have and how many are left , but it also created a sense of achievement as the badges now move from left to right



- I drew the inspiration of the new badge system from fridge magnets, Ideally an achievement when achieved, sticks on like a magnet to the achievements panel, which is also why there is an indication that something can be stucked on to by the semicircles in the new design.
- Sound was also added to help the experience of something sticking on.

Suraksha Device

Context: With outbreak of the global covid pandemic , social distancing was an instrumental and achievable prevention measure against covid, Understanding the importance of social distancing, we attempted to aid a common man in doing so.

Date: April 2020 - December 2020

My role in the team of 4:

Product Design, Ideation, User Research

Purpose and goals:

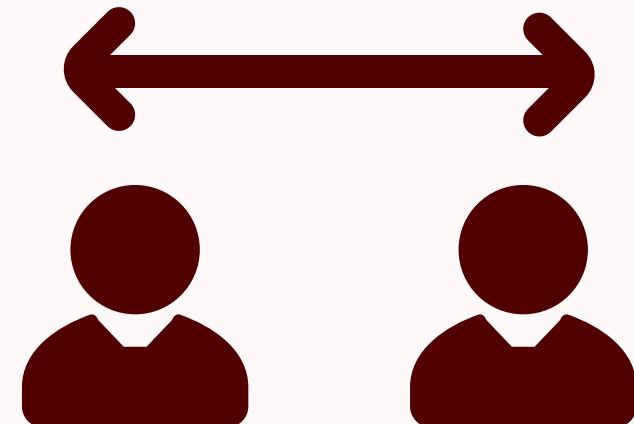
To Design and develop an efficient system to aid social distancing, that can be easily understandable, affordable and fool-proof. The design should further encourage the user to have the comfort of wearing the device consistently and increase awareness in social distancing for others.

Stakeholders:

General population including children.

Tools used :

Adobe Illustrator , Arduino, Tinker-cad



Published and listed at:

- 2020 4th International Conference on Electronics, Communication and Aerospace Technology (ICECA)
- World Health Organisation global literature on novel coronavirus 2020 ncov.

Experiments and approach:

Design:

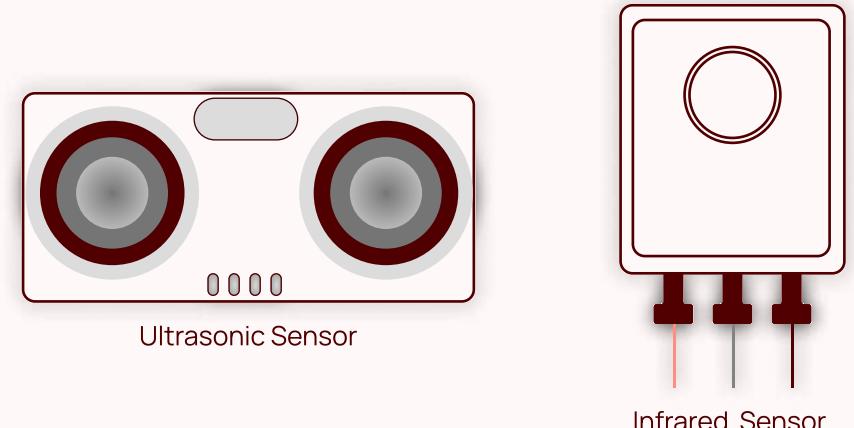
A design to hold all the various sensors required in the future and present had to be made.

- The idea of a wrist band however, was ruled off as it had a high risk of detecting the user's own body, as it operates close to the user's body, which might result in false alerts.
- The belt was also ruled off, as making use of many US or IR sensors to cover 360-degree range would make the device very bulky and inconvenient.

Sensors:

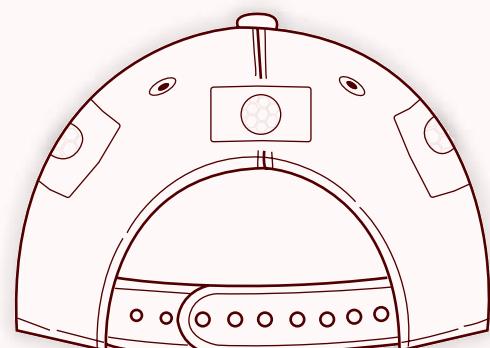
Sensors used should accurately detect a human in the vicinity of 1.5 metres while also being portable and light-weight. Some of the narrowed down sensors were:

- The Ultrasonic Sensors and Infrared sensors, have 30 degrees and 45 degrees range of sensing, respectively. They detect every inanimate object in their vicinity, giving false-positive results as the detected object might not always be a human.
- Using too many of aforementioned sensors to achieve 360-degree implementation will definitely make the system more complex, bulky and most importantly, inefficient.

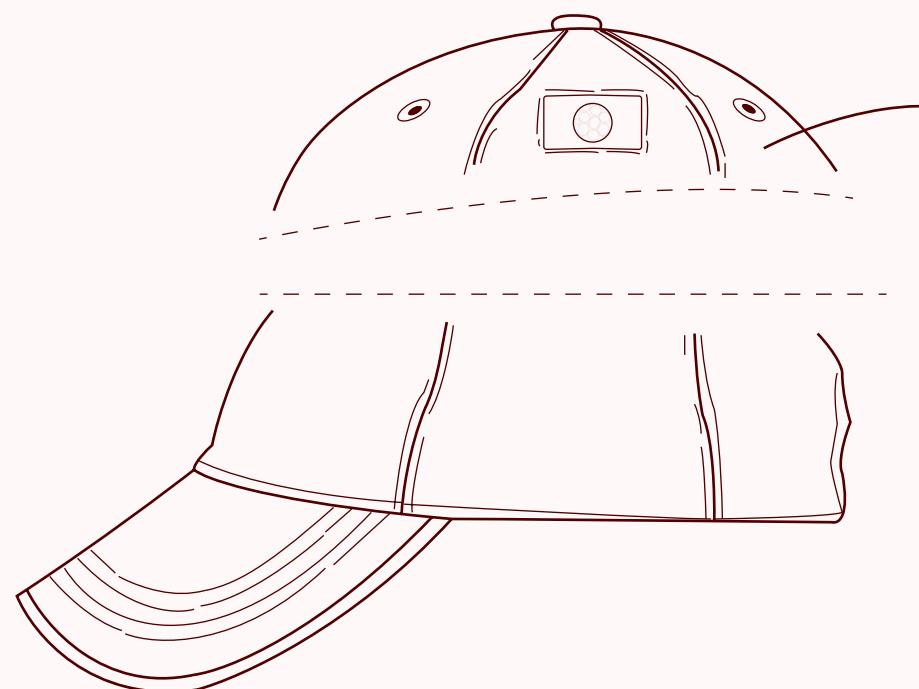


Final Designs:

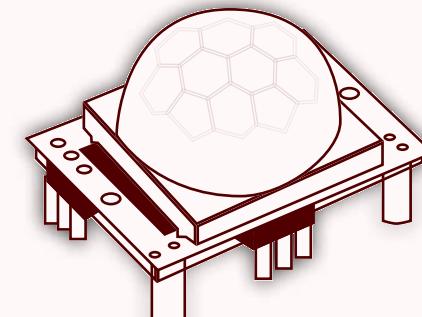
- The final sensors used for the system for the use of Passive Infrared motion sensors which detect only human and animal objects elimination false-positive results as well as having a large range of 120°.
- The final model of the device was decided to be cap worn on the head as it can be worn at convenience. It also enhances comfort as all the sensors and microcontroller can be tucked into a compartment on top while accommodating the head of the user



View of all 3 PIR sensors used on the cap, each having a range of 120° which results in the collective range of 360°. Sensors can further be designed to make the cap attractive.



Exploded view of the cap and its components



PIR Sensor



Baseball cap

Compartment above head contained:

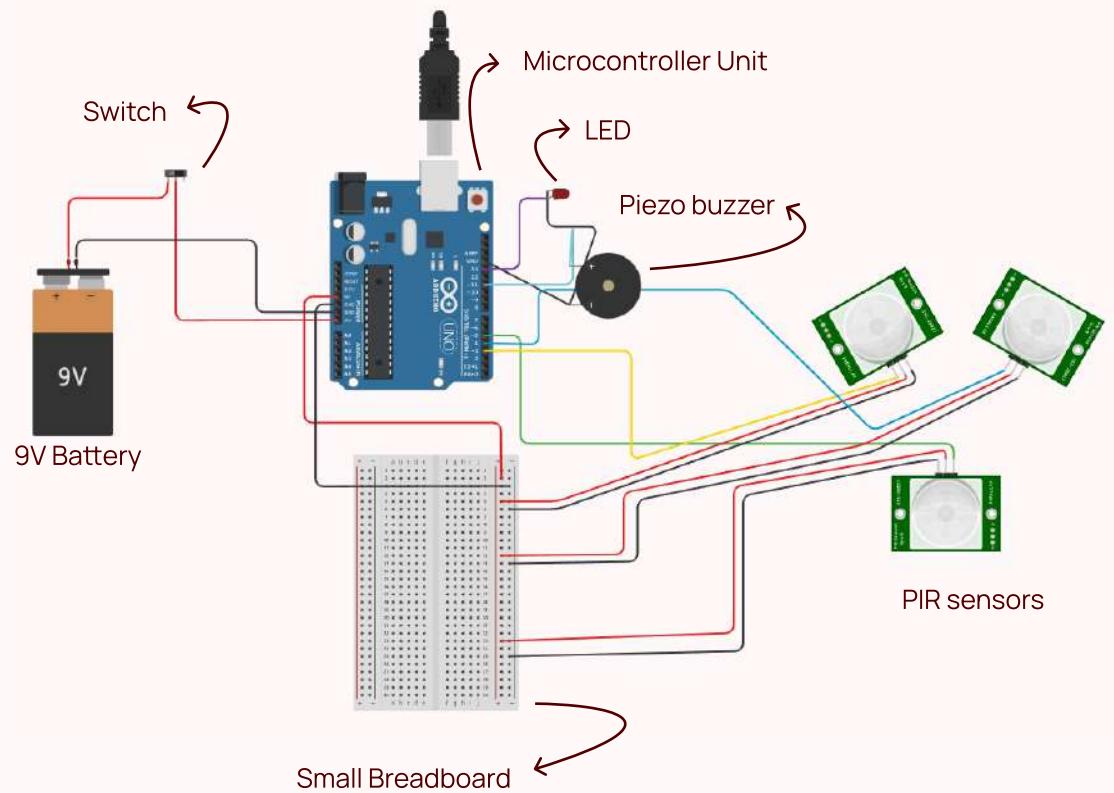
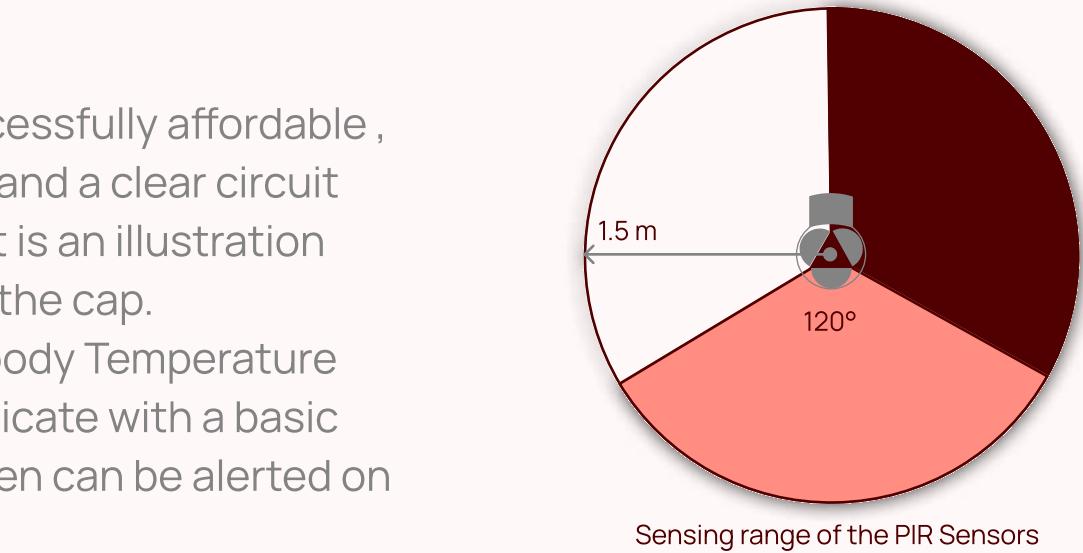
- 1x Node Micro controller Unit
- 3x PIR sensors
- 1x Buzzor
- 1x LED bulb
- 2x Lithium ion 5V batteries

Project specifics and Results :

- The design and development project were successfully affordable , given below are the prices for the components and a clear circuit diagram made using Tinker Cad, to the the right is an illustration demonstrating the coverage of the sensors on the cap.
- Future ideas are to include MAX30205 Human body Temperature sensor and use a Bluetooth module to communicate with a basic mobile app interface to provide alerts, these then can be alerted on a smartwatch as well

S.no.	Component Name	Purpose and Specifications	Price(USD)
1	NodeMCU	Manage the complete system onboard Wi-Fi and Bluetooth 32bit dual core processor 12 bit ADC and GPIO	8.49\$
2	HC-SR501 PIR motion sensor	Detects the human movement 5V supply voltage, 120 degree coverage	3.64\$
3	Buzzer	To alert the user and other people 5V 80dB	0.61\$
4	LED	To notify the user 1.5V	0.061\$
5	Li ion Battery	To power the complete system 5V 2000mAh with BMS	4.85\$
Total Cost in INR			17.65\$

coversion rate: 1\$ = 82.42₹



AUMS redesign

Context: AUMS which stands for “Amrita University Management System” is essentially a software used by my college to support all the major institution-wide administrative and evaluation systems. Acting as a portal for admission , administration , academics , accounts , examinations, e-library and so on.

Date: Jan 2022 - Mar 2022

Role: Web Design, User Research

Purpose and goals:

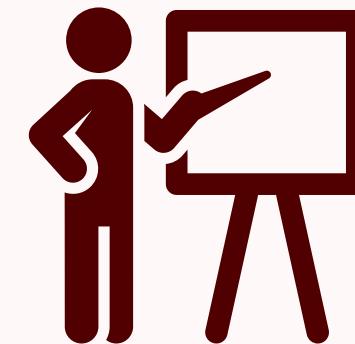
- To make a more useful and usable redesign of the existing Amrita University Management System Website by focusing more on the usability.
- The main motivation emerged from being an end-user studying and using AUMS actively for assignments and quizzes as a part of my coursework. The dissatisfaction of spending a lot of time navigating through the portal and missing submissions a lot of times.

Stakeholders:

Students, Teachers and Management

Tools used :

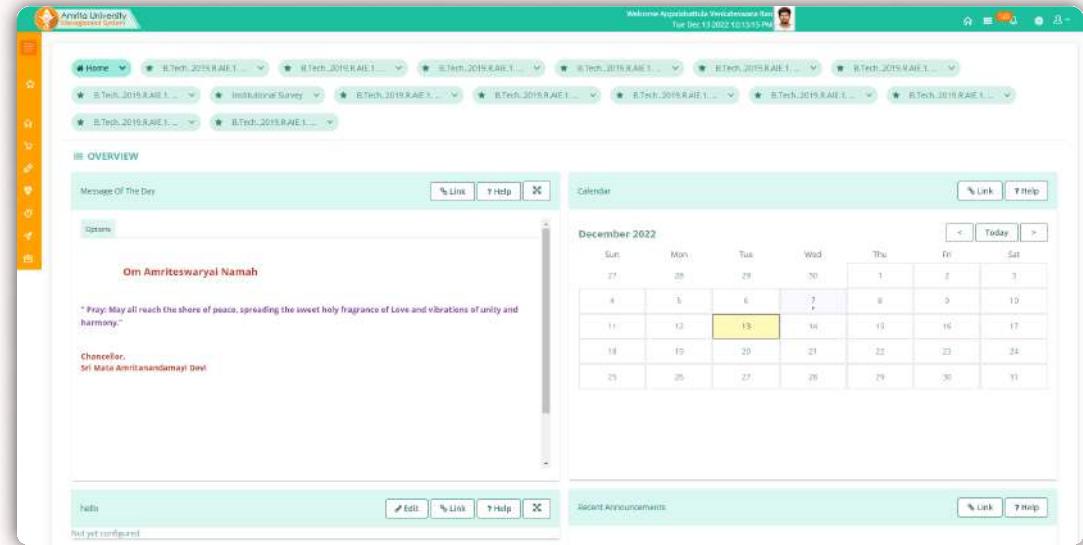
Adobe Illustrator , Figma,



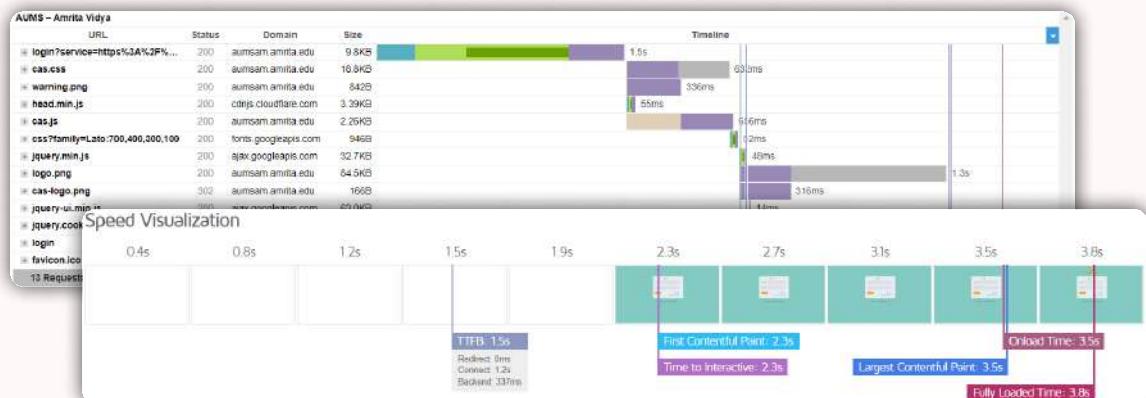
Existing site inspection:

Usability:

- Many of the options are repeated in places which can not be easily accessed.
- Icons are irrelevant for many modules, making it extremely hard to navigate
- Course codes instead of course names make it extremely hard for a user to navigate as every semester these codes change.
- Similar functionalities are misplaced.



Snapshot of the existing site



Performance and Speed tests

Integrity:

- Fault trapping (I/O) : no fault trapping algorithm in place.

Performance:

- minimum processing times: >2 seconds is unusably high
- Query and Reporting times: >3 seconds.
- Overall Response times : >5 seconds

Approach and deliverables:

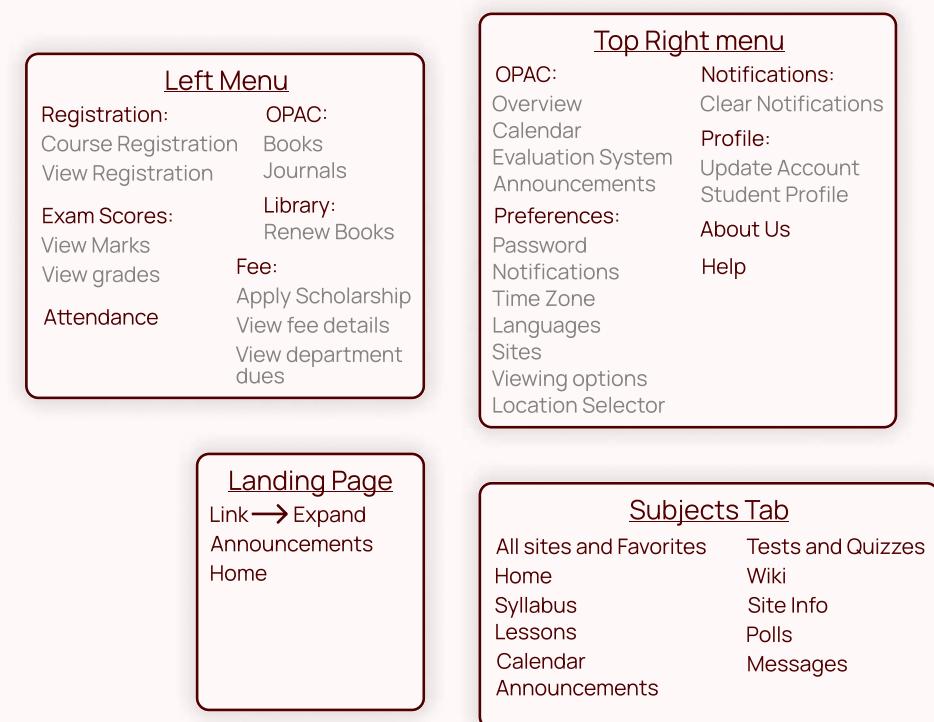
Apart from the user Interface being sloppy and confusing, the performance tests indicate that the site along with it's design is almost unusable, picture having to remember a course code before submitting that one assignment nearing deadline.

Approach:

- A mere superficial makeover would not help the usability of the site, it needs a major structural overhaul accounting all the functionalities present and presenting them in the most usable manner possible.
- I decided to find empathetic ways to prioritize the functionalities and performed a Red Route Analysis, to further structure and organize all the remaining functionalities I created an Affinity diagram.



Red Route Analysis of functionalities.



Affinity diagram of all functionalities

Wireframes:

Welcome Venkat!
Friday Dec 16 12:15pm

Updates

- Sensors Assignment 1 marks returned.
- Mathematics quiz scheduled for 3pm today.

Coursework: Semester 7

- Mathematics for Intelligent Systems
- Intelligence of Biological Systems
- Introduction to Drones

User profile icon in the top right corner.

Landing page functionalities prioritized from Red Route Analysis

Department

- Registration
- Exam Scores
- Library
- Attendance
- Fee Details

Preferences

- Profile
- Password
- Time-Zone
- Languages
- About
- Log Out

19AIE103 Introduction to Drones

- Assignments
- Quizzes
- Announcements
- Classes

All menu options re-arranged according to the Affinity Diagram.

- The most important functionalities analyzed through the Red Route Analysis were made the most easier to access .
- Hierarchy, relevance of icons were used to reduce clutter and simplify the interface.
- All the functionalities are organized and re-arranged
- The attributes of the UI that need to be changed according to their priority are described in the image.



The End

reach out @ venkatappalabattula.github.io