PRABODH SAKHARDANDE

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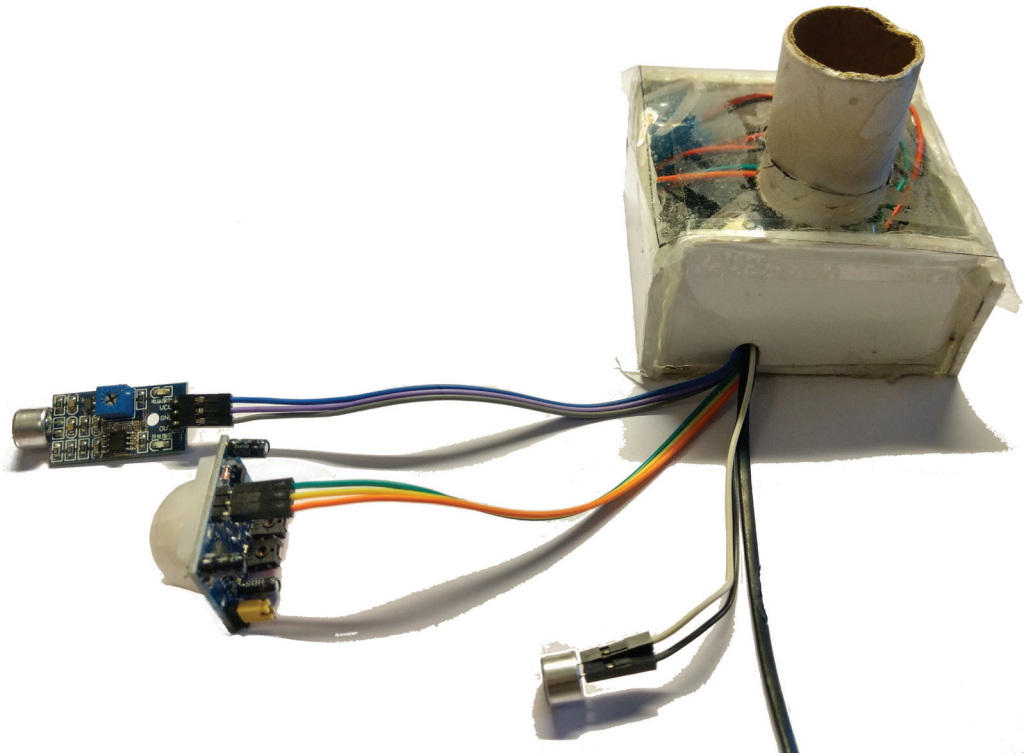
This is a condensed compilation of my projects, for details and latest work, please visit:
prabodhs.site



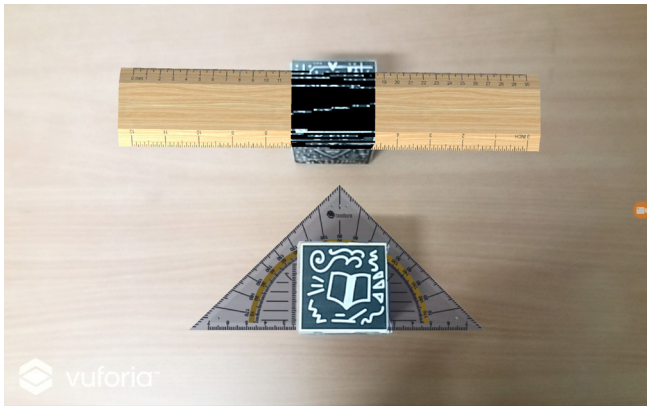
COGNITIVE LIGHTS

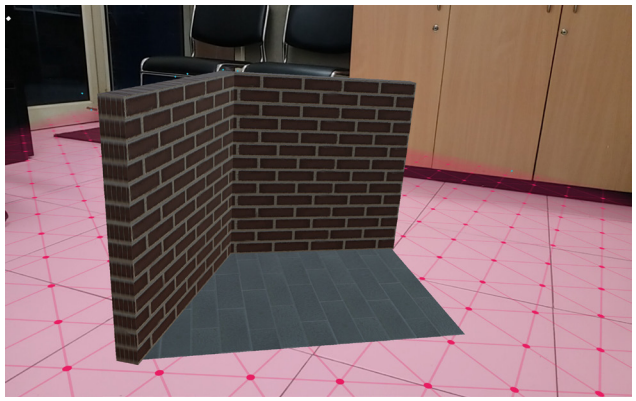
COGNITIVE DESIGN

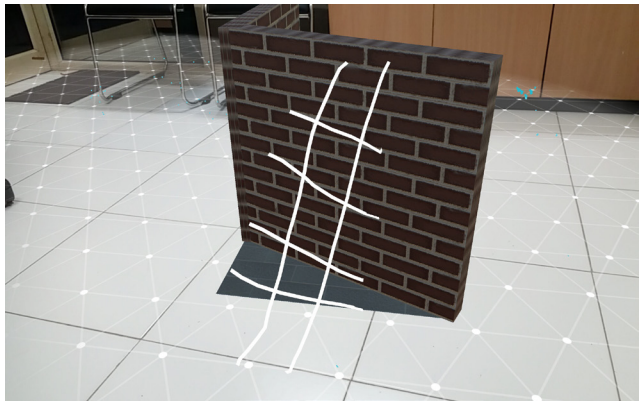
INTERACTION DESIGN

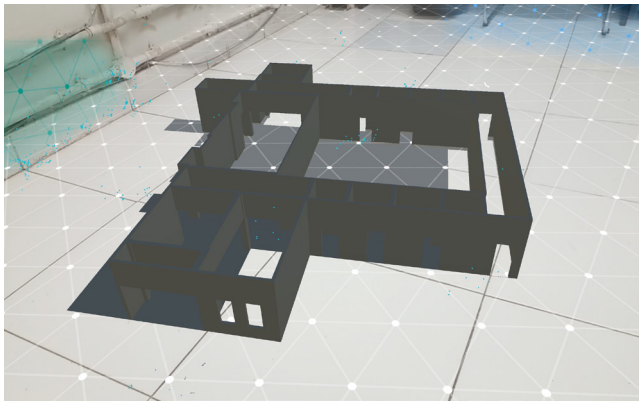
2017

The core purpose of Cognitive Lights is to provide a subtle sense of accompaniment. It aims to study the point at which a human machine relationship can have an emotional link and what amount of cognition should the machine exert in order for this to happen. Further it displays how a small change in everyday devices can create a significant difference in user experience. The glowing crystal tree currently has the ability to respond to human presence and can be spoken to. When left alone it calls for attention or slowly fades away.









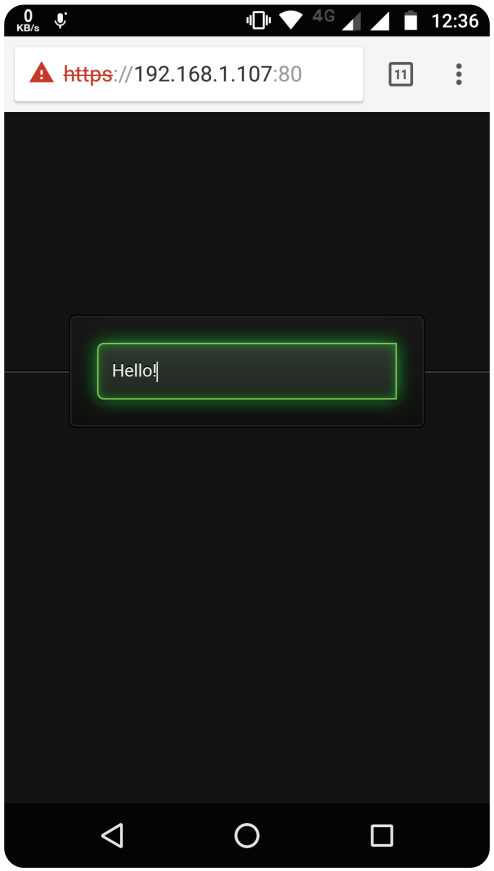
SCHOL(AR) / IMAGINE(AR)

AUGMENTED REALITY

ANDROID, UNITY, ARCORE

2019

ScholAR is an ongoing research project taken up with the IDC School of Design at IIT Bombay. It involves using augmented reality mediums towards helping students learn in a more integrated and effective manner. My contribution to this project was the ImagineAR branch of research. It involved using a technique of “learn by doing” along with “open-ended problem solving” through augmented reality. AR gives the ability to visualize certain aspects of a problem that would otherwise not be possible. This was leveraged through a constructivist theory based on the work of Vygotsky, Piaget and Papert



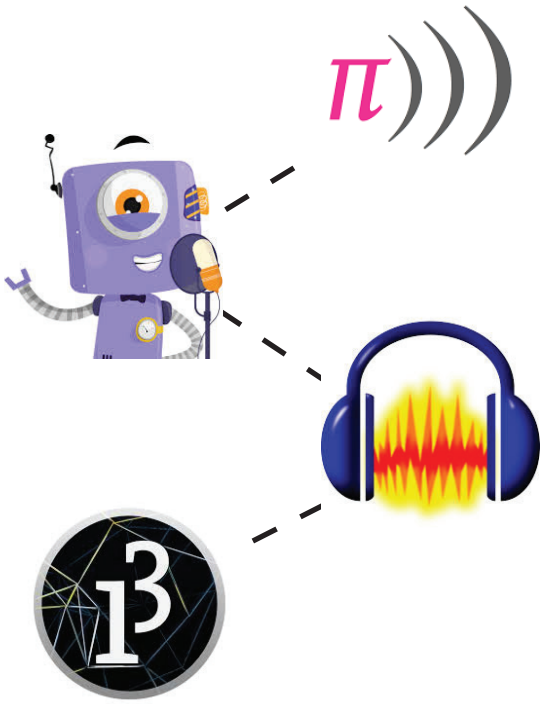
BLOWEY (BLOWING MESSAGES)

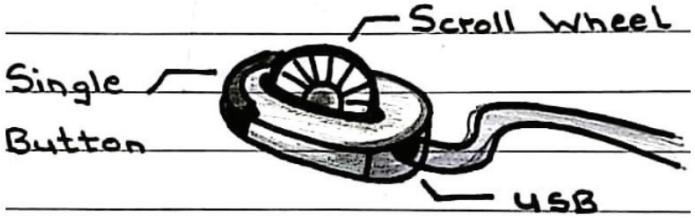
INTERACTION DESIGN

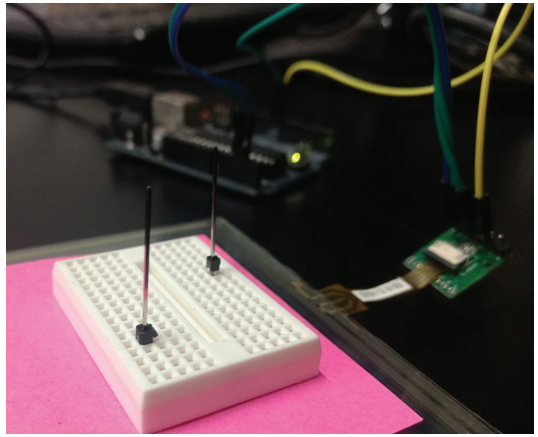
SOFTWARE DESIGN

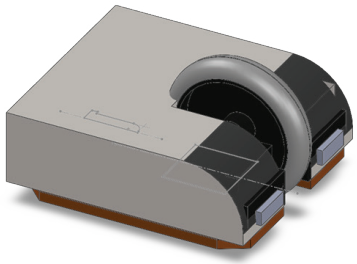
2017

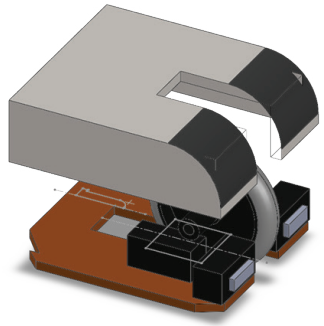
Humans have the tendency to build mental constructs around themselves and adhere to standard practices of everyday motion, like “switch on the lights” or “press a button to send a message”. This project explores how constructing an experience tangential to these constructs can lead to a magical experience for the user. The first of a series of projects, Blowing Messages is an interactive exhibition project which lets anyone in the vicinity type a message on his or her phone and then blow it towards a projector screen where it is displayed.











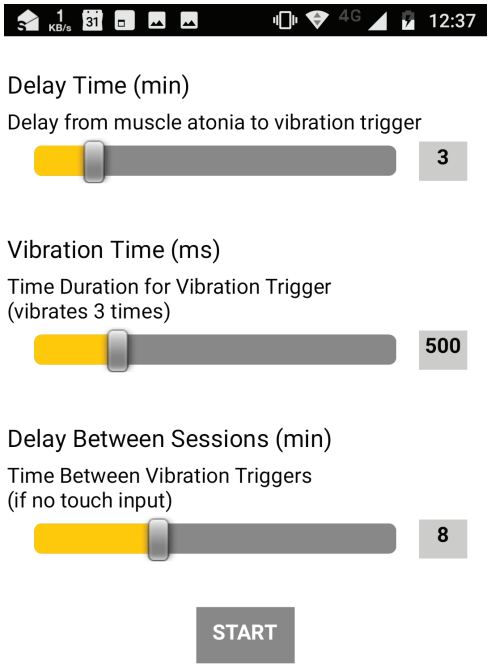
AUDITORY GRAPHS

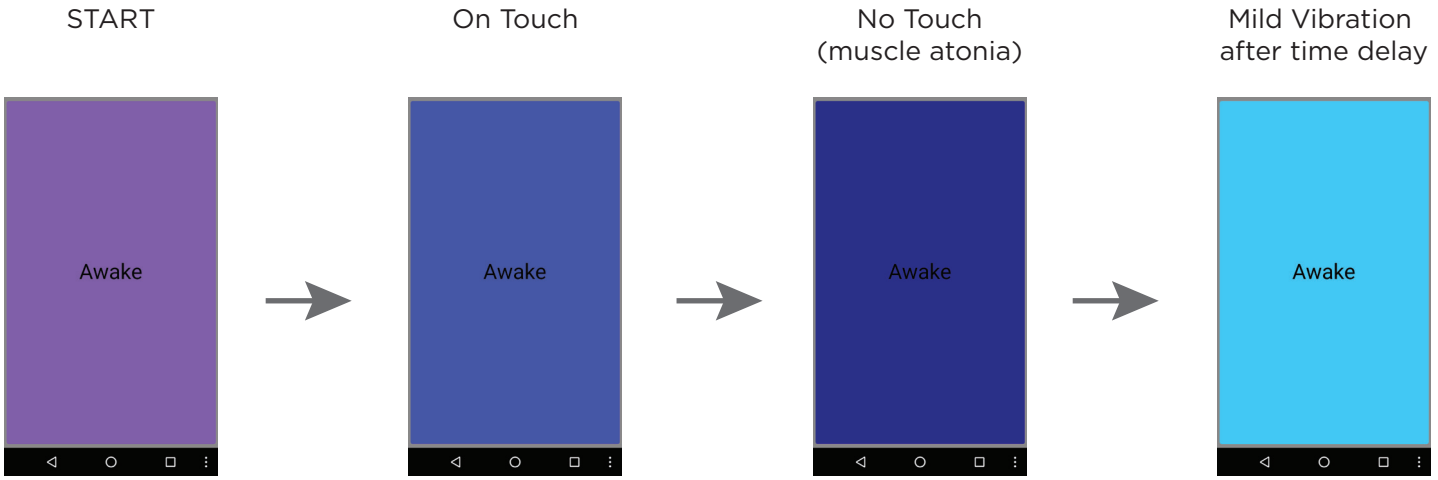
SONIFICATION

INTERACTION DESIGN

2018 - 2019

This research project with IDC, IIT Bombay explored how visual graphs like bar and pie charts could be presented to visually impaired users in a manner that can be perceived effectively. Initial prototypes were explored that used multimodal perception over a tactile and auditory space. It converged into the development of novel sonification techniques and their usability testing. The designed sonification techniques were tested across 20 sighted and 20 visually impaired participants. Serial-Tone, Parallel-Tone, Serial-Speech and Parallel-Speech.





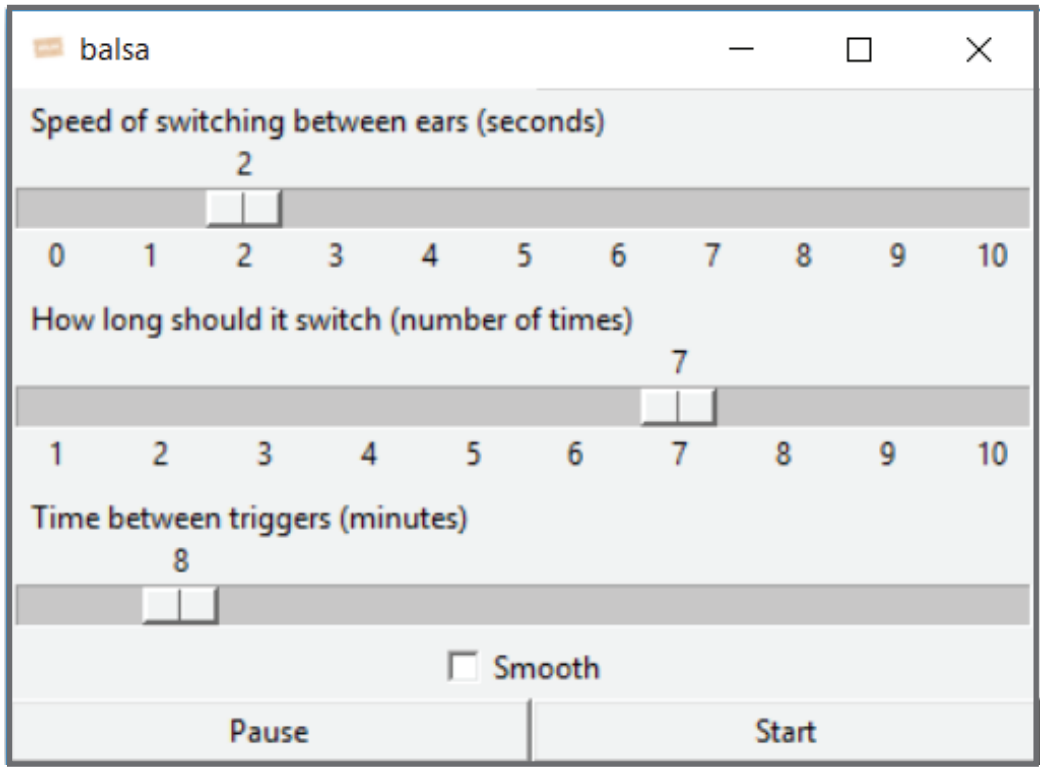
HYPNAGOGIC ASSIST APP

INTERACTION DESIGN

ANDROID

2018

Based on the research conducted by Adam Horowitz at the Fluid Interfaces Group, this is an exploration towards a low cost smartphone based implementation through strategic intervention for inducing the hypnagogic sleep state. It uses the concept of muscle relaxation or sleep atonia as an indication of onset of REM sleep. Users hold the phone horizontally over their palm, with three fingers clutching the screen. As they fall into the second stage of sleep, their fingers relax and they lose contact with the touchscreen. After some interval the phone gently vibrates, attempting to bring the user into the hypnagogic state.



BALSA

INTERACTION DESIGN

SOFTWARE DESIGN

2018-PRESENT

Recent research has shown the effect of bilateral stimulation in establishing positive cognition. Companies like TouchPoint™ have gone forward to make products which enable alternating bilateral stimulation through tactile vibration feedback. BALSA attempts to bring the benefits of this concept to everyone through a software app. Over stipulated time intervals audio is switched across the ears leading to bilateral alternating stimulation through audio.

website_scrape.txt (~/Open_Source/SyneScrape/test/test/inputBaseline) - gedit

Open

```
 Here is the full text of Steve Jobs'
It is one of the greatest
 reflections on life we've ever heard
If you want to watch him
 give the speech


 I am honored to be with you today at your commencement from one
 of the finest universities in the world
I never graduated from
 college
Truth be told, this is the closest I've ever gotten to a
 college graduation
Today I want to tell you three stories from
 my life
That's it
No big deal
Just three stories


 The first story is about connecting the dots


 I dropped out of Reed College after the first 6 months, but then
 stayed around as a drop-in for another 18 months or so before I
 really quit
So why did I drop out?

 It started before I was born
My biological mother was a young,
 unwed college graduate student, and she decided to put me up for
 adoption
She felt very strongly that I should be adopted by
 college graduates, so everything was all set for me to be adopted
 at birth by a lawyer and his wife
Except that when I popped out
 they decided at the last minute that they really wanted a girl

 So my parents, who were on a waiting list, got a call in the
 middle of the night asking: "We have an unexpected baby boy; do
 you want him?" They said: "Of course
" My biological mother later
 found out that my mother had never graduated from college and
 that my father had never graduated from high school
She refused
 to sign the final adoption papers
She only relented a few months
 later when my parents promised that I would someday go to
 college


 And 17 years later I did go to college
But I naively chose a
 college that was almost as expensive as Stanford, and all of my
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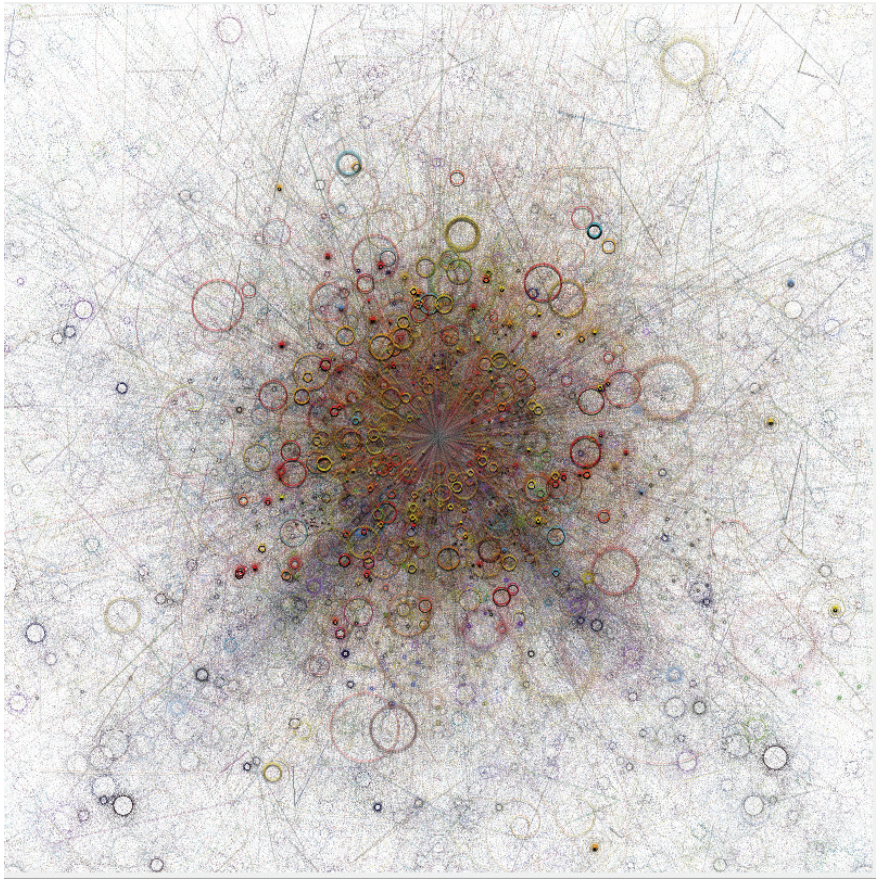


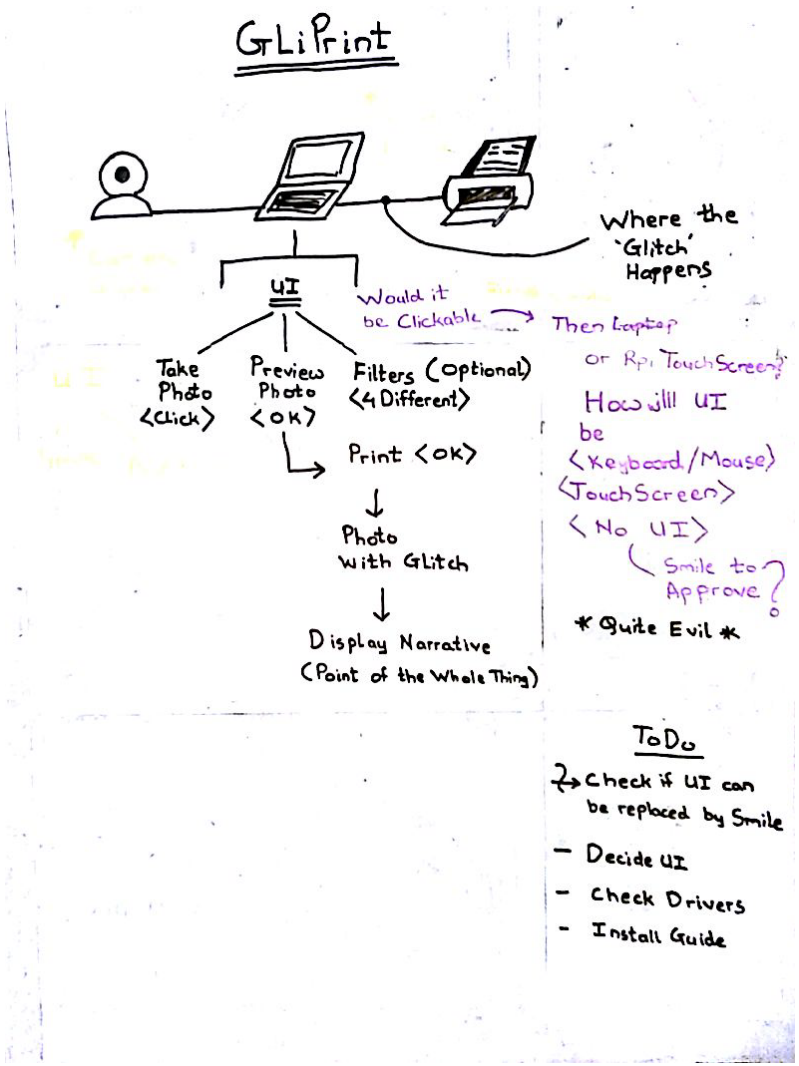
SYNESCRAPE

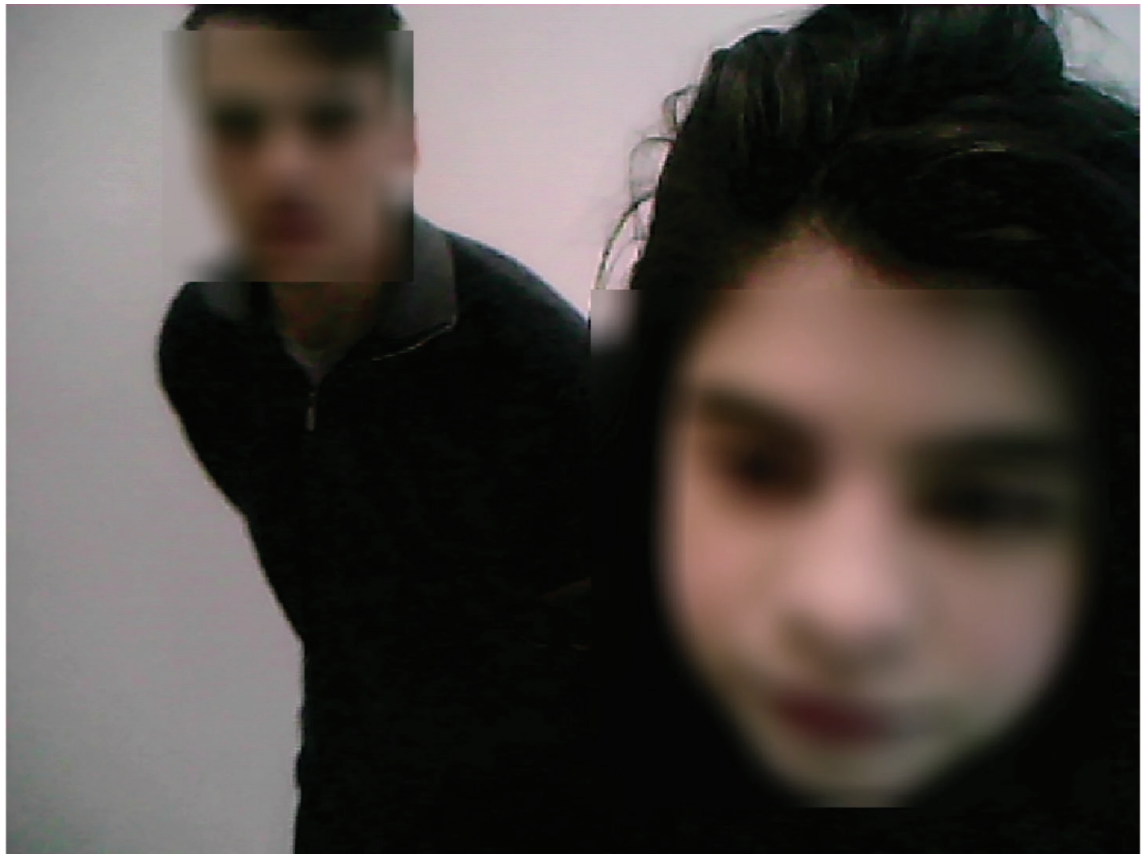
SOFTWARE DESIGN

COGNITIVE DESIGN

2017

Visually display any web page as a fleeting glimpse of the emotions it depicts. Synescrape combines the power of Scrapy - A Fast and Powerful Web Crawling Framework and Synesketch - the Web's first free open-source software for textual emotion recognition and artistic visualization. It automatically scrapes text from any web page and animates it as a representation of its emotion. This is an example of Steve Job's famous Stanford speech scraped and displayed from www.businessinsider.com





http://jessicaevans.art/facial-rejection/

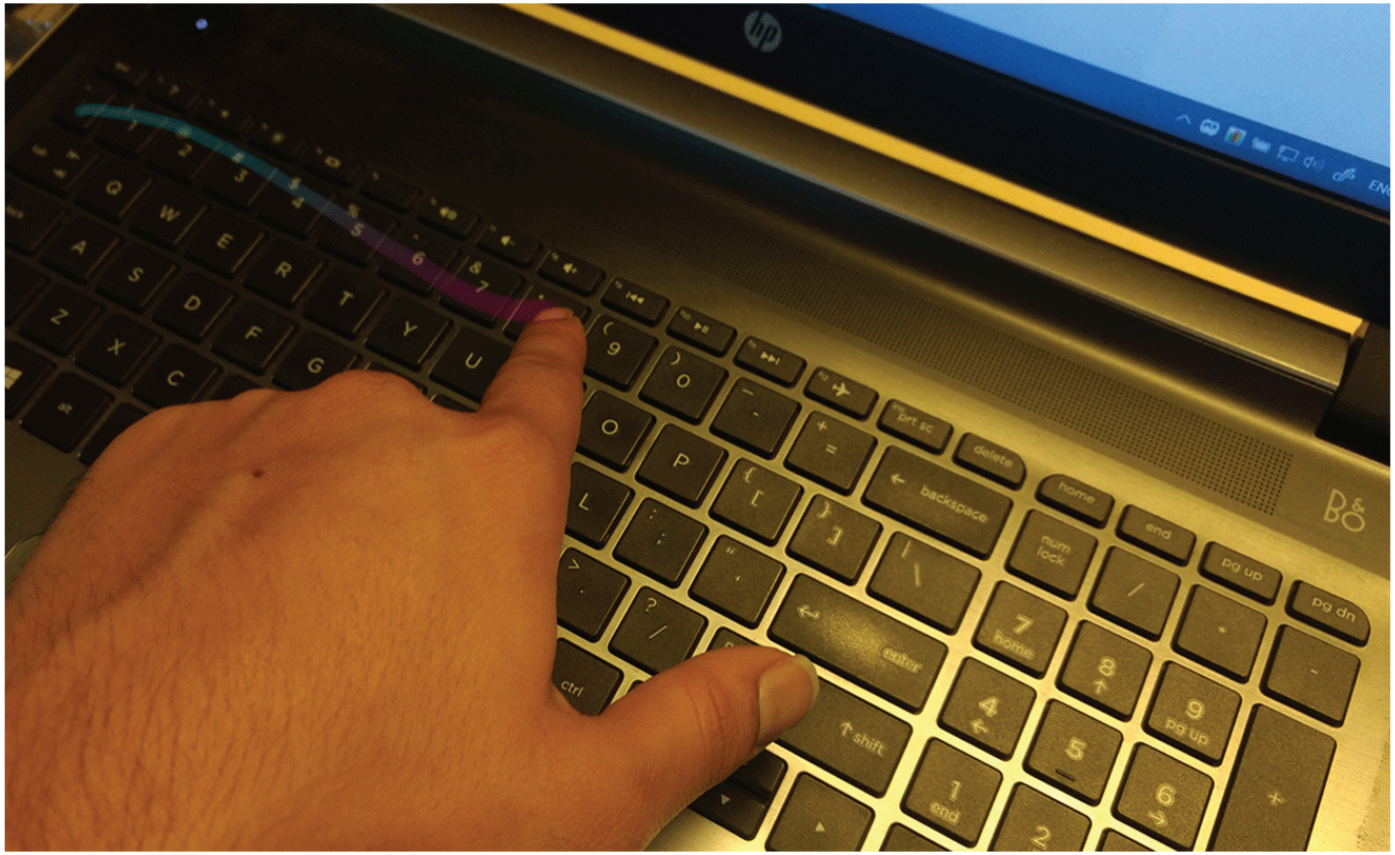
FACIAL REJECTION

ART EXPLORATION

GLITCH ART

COLLABORATION
2018

Surveillance programs are omnipresent with our identities being captured and tracked wherever we go. Facial Rejection is an exploration into the glitch as an art form. A counter-surveillance application, a stand up against facial recognition technologies being imposed on users of social media. It further explores how much we associate our visual appearances with ourselves on social media. A stark look into how would it affect an individual or humanity as a whole if technology stopped recognizing humans. This work is a collaboration between Jessica Evans and Prabodh Sakhardande.

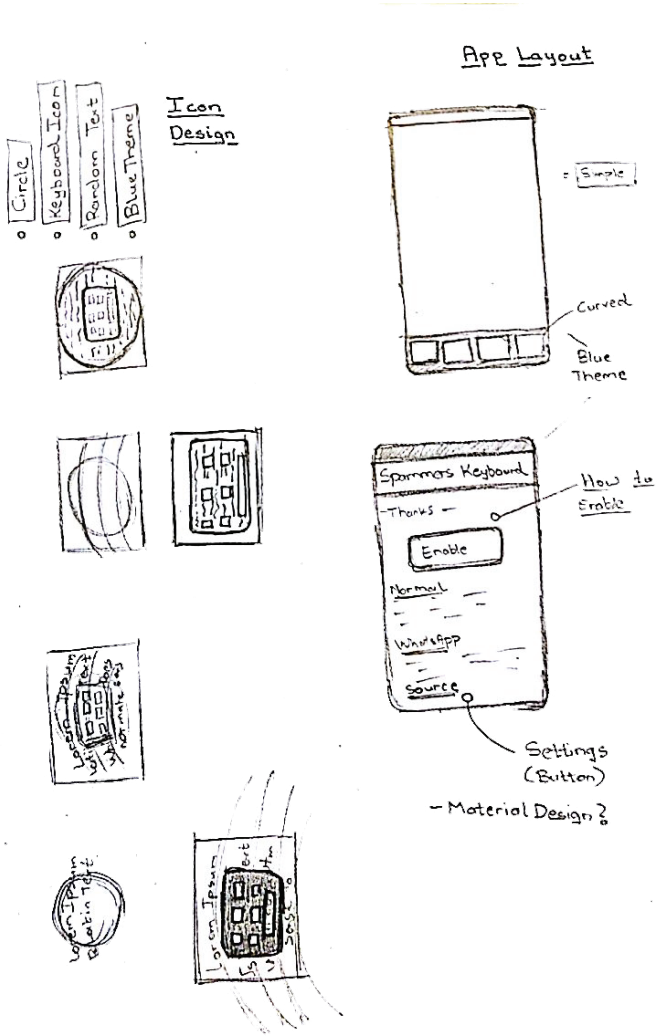


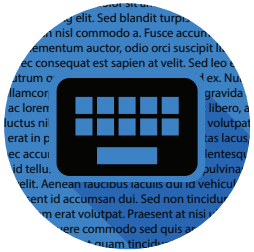
KEYTOUCH

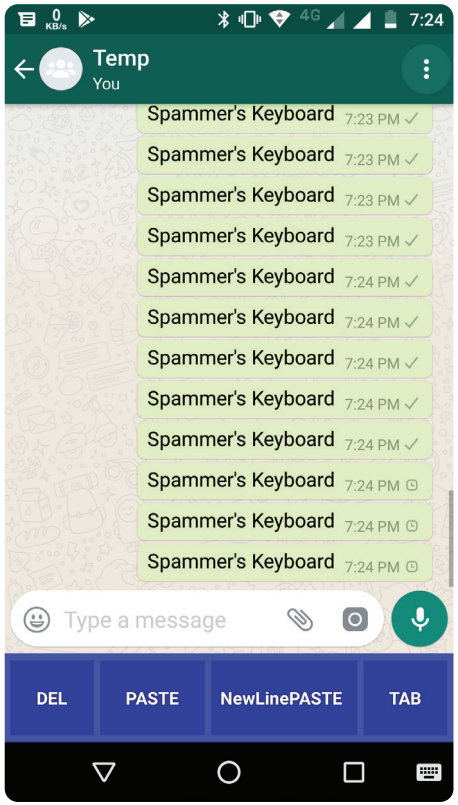
INTERACTION DESIGN

2018-PRESENT

Keytouch makes it possible to draw over the mechanical keys of any keyboard similar to how gestures are drawn on a touchscreen. It allows to execute simple functions like increasing/decreasing volume without even having to look at or move your fingers away from the keyboard.







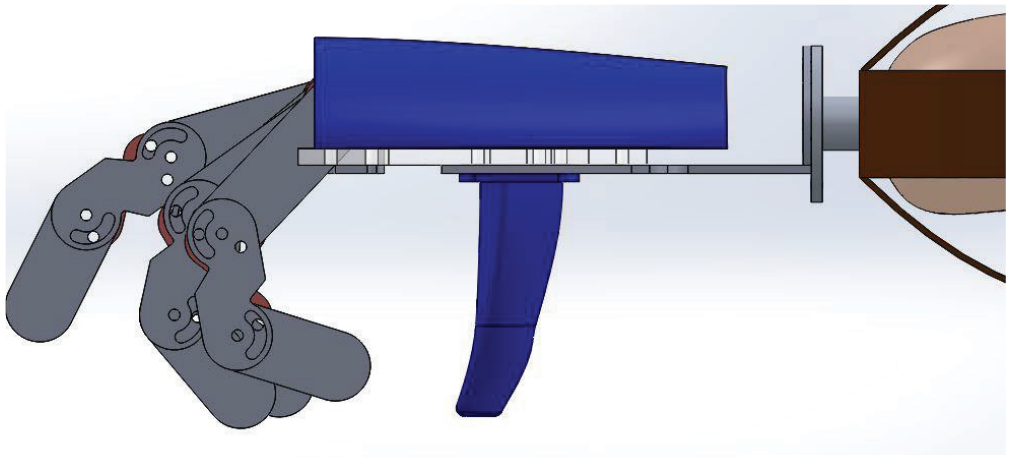
SPAMMERS KEYBOARD

UI/UX

ANDROID

2017

Spam is inevitable and thoroughly hated. Spammers Keyboard explores how something unwanted and hated can be looked at in a fun and playful manner (atleast for the user). It looks to test the receivers temperament to the limit and goes to show that not all types of spam may be bad. This special android keyboard has the dedicated purpose of pasting copied text multiple times. In a way, it's ideal to get kicked out of boring WhatsApp groups, annoy people and deal with actual spammers.



LOW COST PROSTHETIC ARM

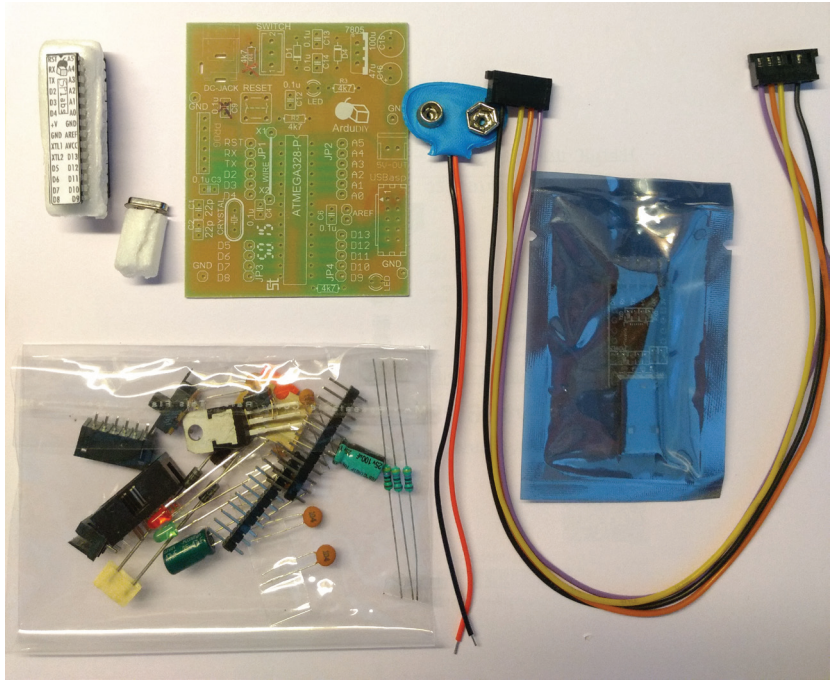
HARDWARE DESIGN

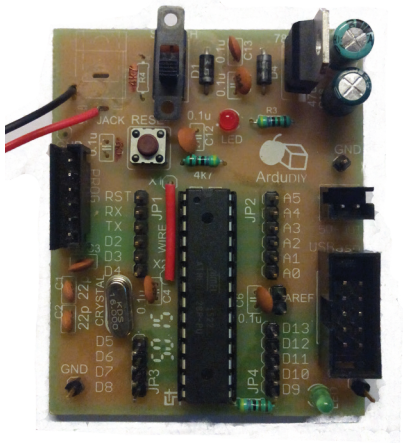
SOFTWARE DESIGN

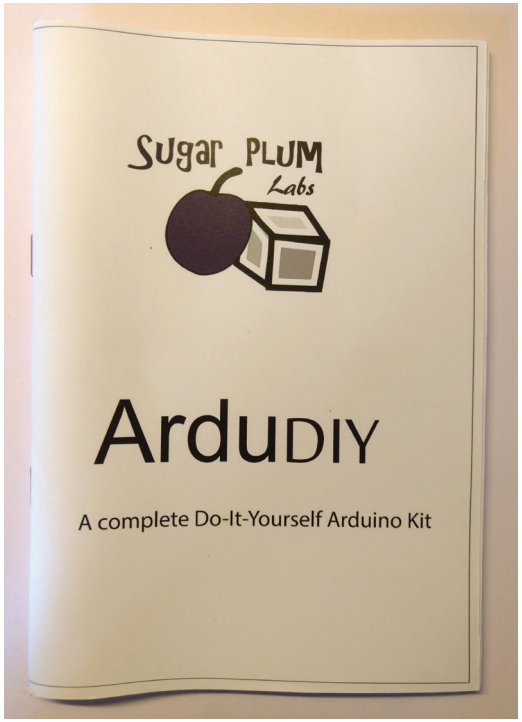
MECHANICAL DESIGN

TEAM
2016 - 2017

This research works towards the development of a prosthetic hand costing below $400, which replicates natural movement of the fingers and provides to help amputees perform basic functions. A bottom up design approach is employed, incorporating only the necessary features so as to bring down the cost of the prosthesis without compromising on reliability. The design and development of this prosthetic arm is targeted towards the rural population which would prove to be beneficial to arm amputees who cannot otherwise afford existing prosthetics to perform basic day to day activities.







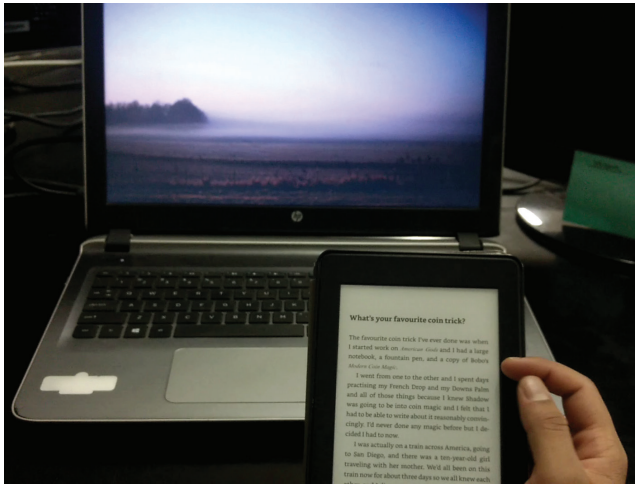
ARDUDIY - THE DO-IT-YOURSELF ARDUINO KIT

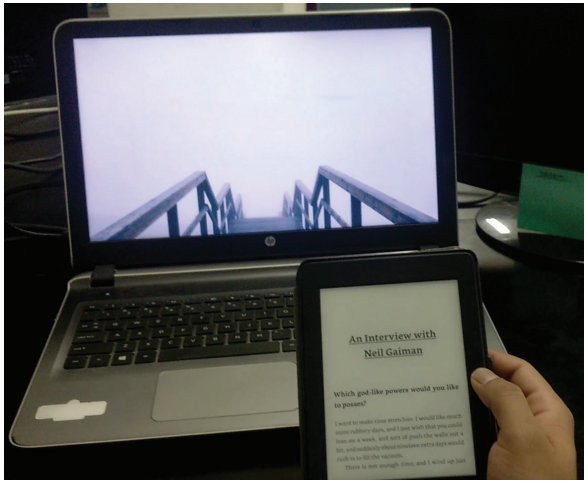
PRODUCT DESIGN

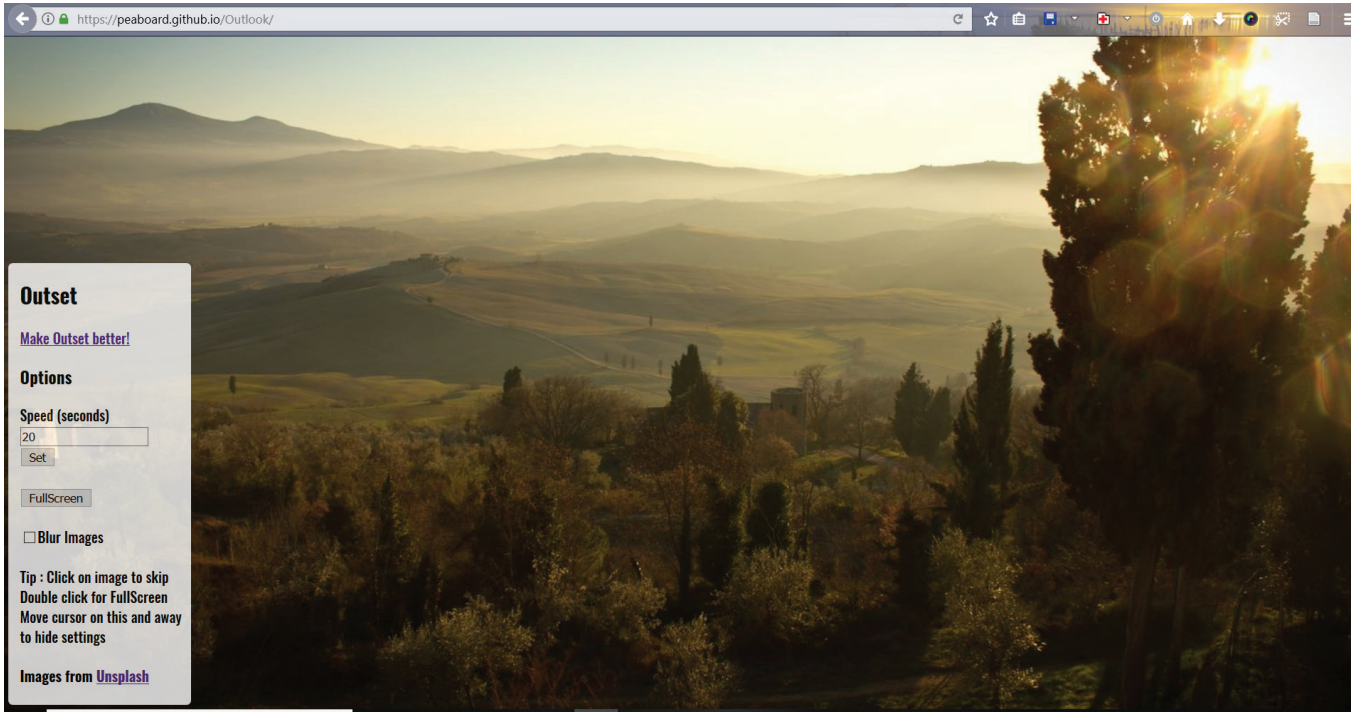
PCB DESIGN

2015

Custom designed Arduino board for worry free hardware tinkering along with all material, components and instructions required to build it from scratch. Meant to get young engineers interested in the world of embedded electronics and software. The inspiration for building this was to bridge the gap between theory and practical education. It aims to generate curiosity and interest, through actually making stuff and help undergrad students venture into domains where they fear to go alone.







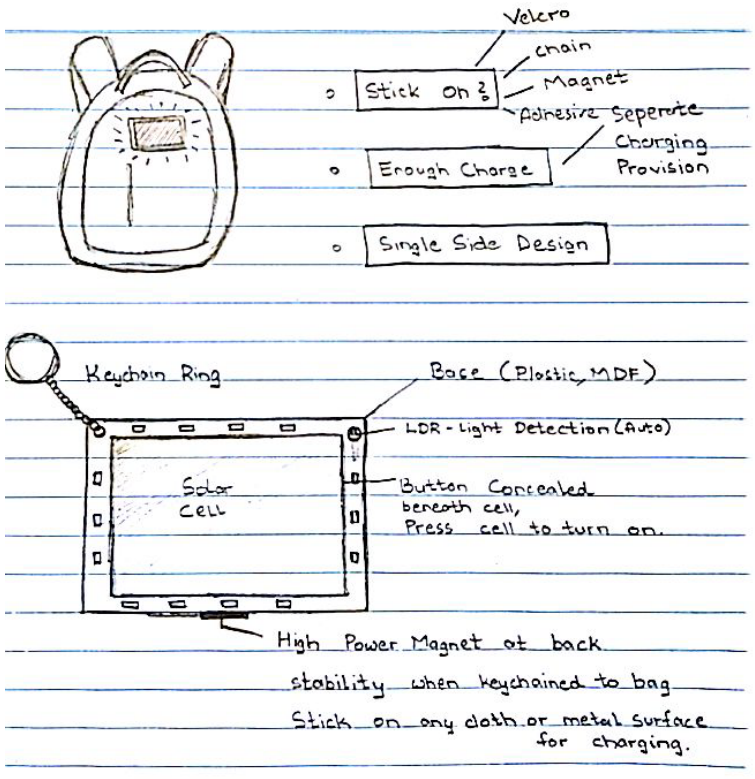
OUTLOOK

INTERACTION DESIGN

COGNITIVE DESIGN

2018-PRESENT

Do images in peripheral vision affect experiences with tasks?
This web app grabs random images from http://unsplash.com and displays them on the screen, continuously changing it at intervals. Based on the project Outset by Raajit Sharma, there are some modifications in the UI towards a providing a more immersive experience. This is an early stage exploration into understanding calm technology through a visual stimulus and its impact on cognitive behavior.



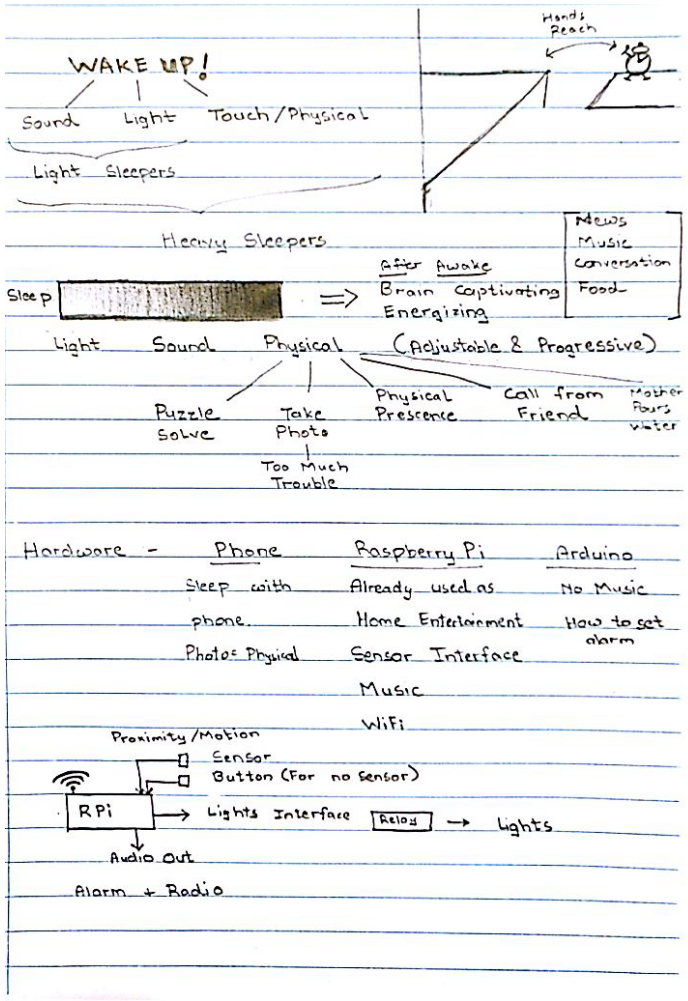
SOLAR TRINKETS

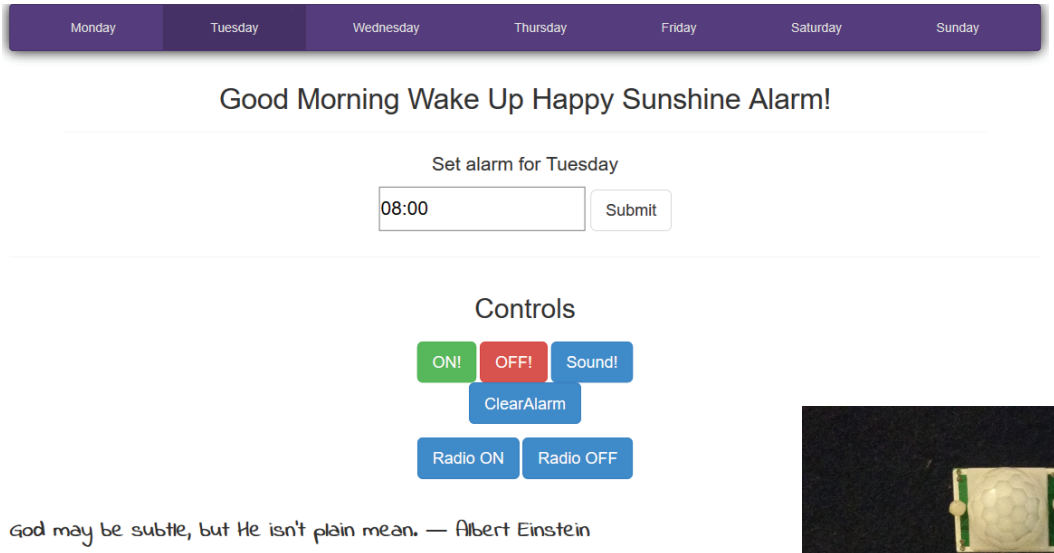
HARDWARE DESIGN

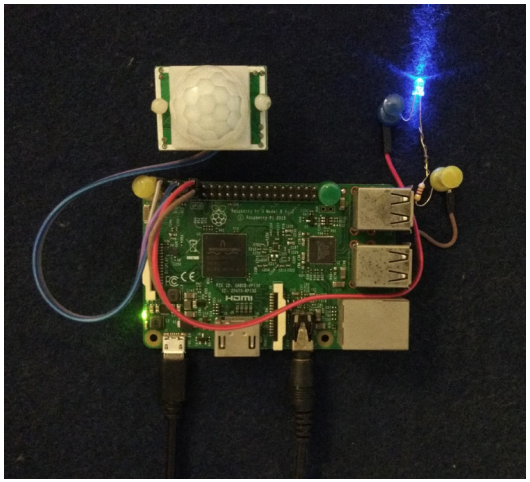
CONCEPT DESIGN

2016

Solar Trinkets try to bring a bit of light and warmth to your travel accessories. Their easy to attach design and solar power source means you never have to worry about them. This prototype, demonstrating an application of this concept as a backpack accessory, lasts up to 5 hours on half hour of charge. Further scope includes the inclusion of automatic lighting, gesture sensing and friendly notification alerts.







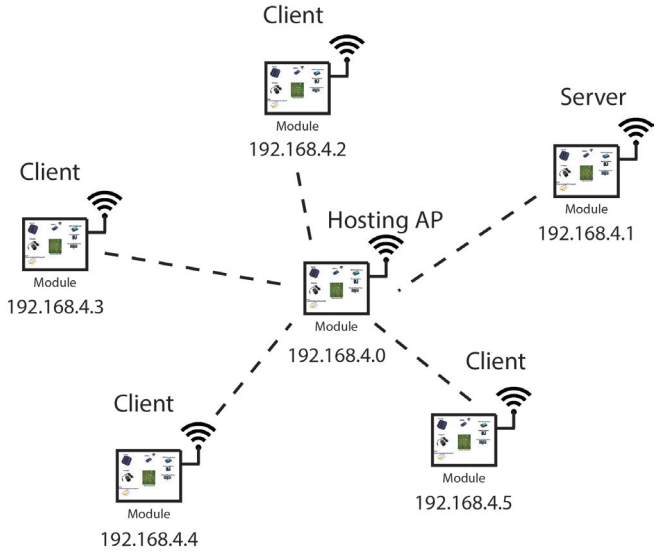
PERSUASIVE ALARM

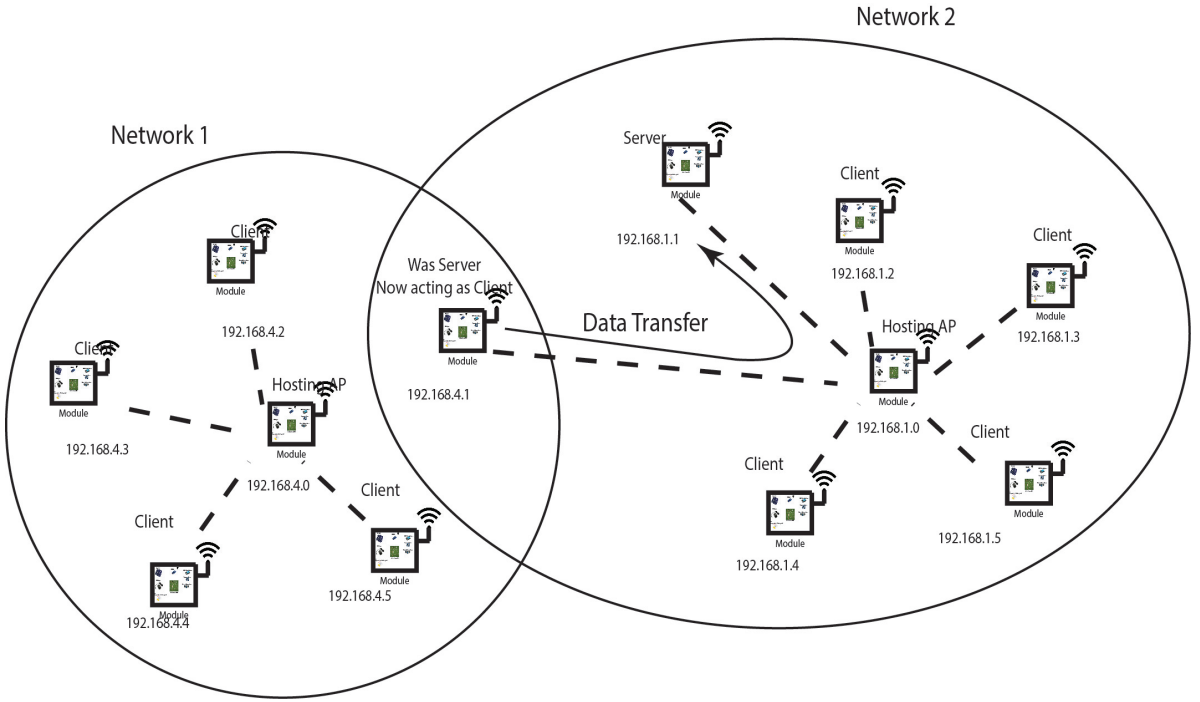
INTERACTION DESIGN

SOFTWARE DESIGN

2017

Built using deep personal experience, an alarm clock which does not stop until you get up and stand in front of it. Also has the ability to slowly turn lights on and off for those gifted souls who need not be woken up forcibly. Once it ensures you're fully awake, it plays internet radio to help get rid of those morning blues. Based on the open source project pi_alarm, contribution to the original source includes presence detection, internet radio and display of random quotes.





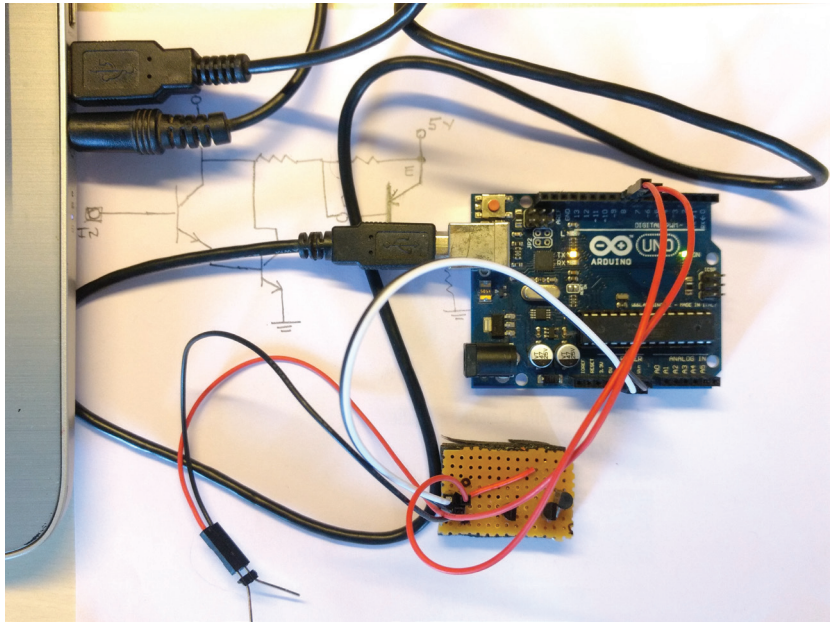
DISASTER MANAGEMENT NETWORK

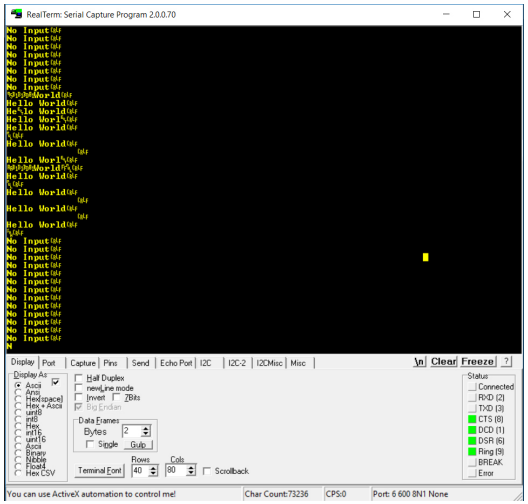
HARDWARE DESIGN

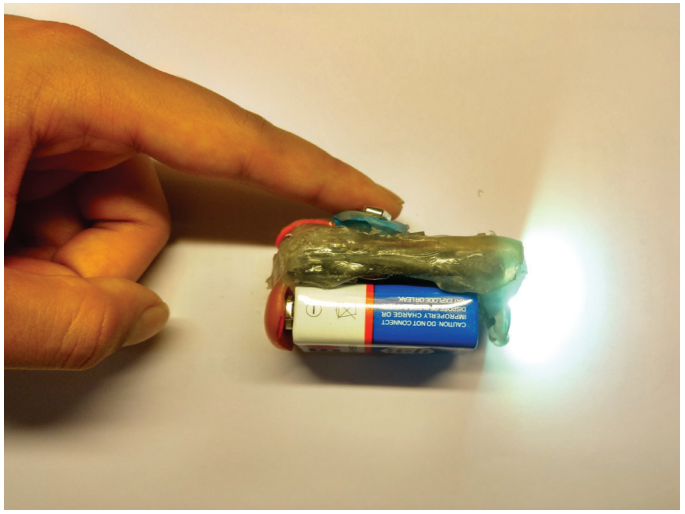
SENSOR NETWORKS

2016 - 2017

In 2015, heavy rainfall led to floods in southern parts of India leading to severe loss of life and property. Due to loss of basic communication facilities relief efforts were restricted by available logistics. This research aims at developing a network of interconnected, independent smart modules as a way to provide centralized data acquisition in the absence of any existing infrastructure using low cost readily available hardware. It also explores how this same network can be used without any hardware modifications in day to day activities of data acquisition for a Smart City Environment.







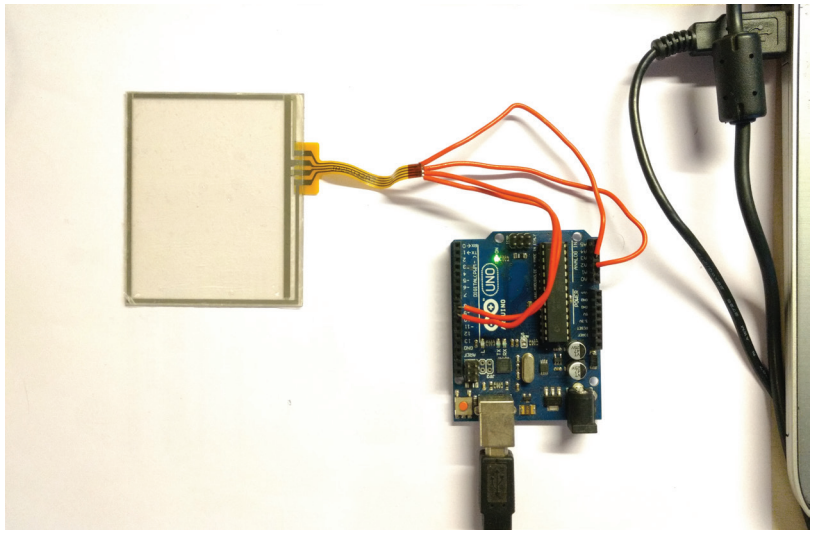
EXPLORING TOUCH

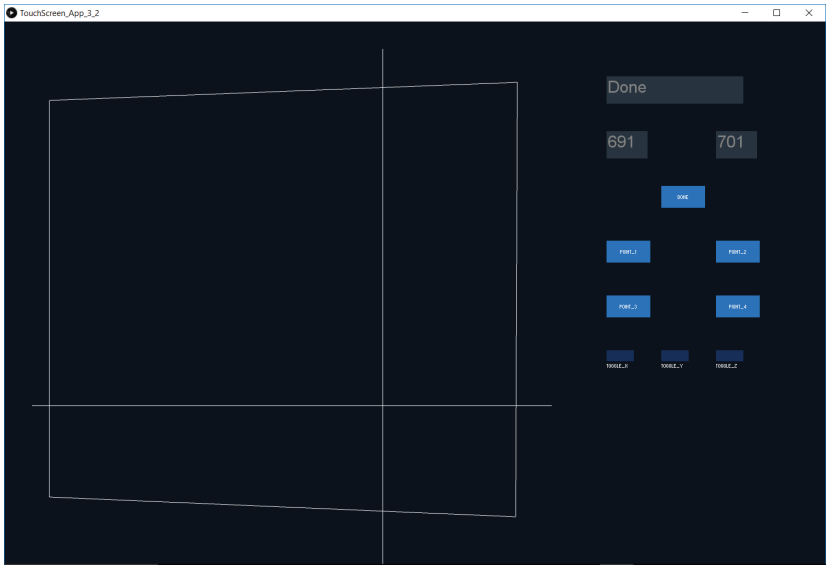
INTERACTION DESIGN

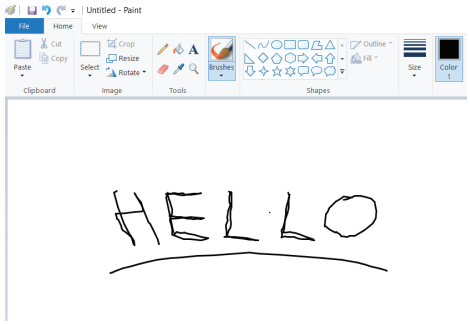
HARDWARE DESIGN

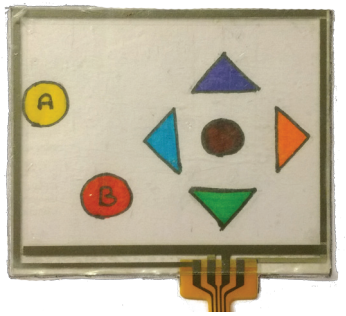
2016-PRESENT

Touch is a fundamental human sense which is often overlooked in the digital age, becoming very machinelike. These projects explore the human element in a touch, from everyday devices which respond on touch, to transmitting data through human touch. A torch is built that lights up on the touch of a person or a chain of people holding hands. Research is done on building apparatus for digital information to be transmitted through human touch, moving towards a world of digital transactions enabled by a mere handshake.









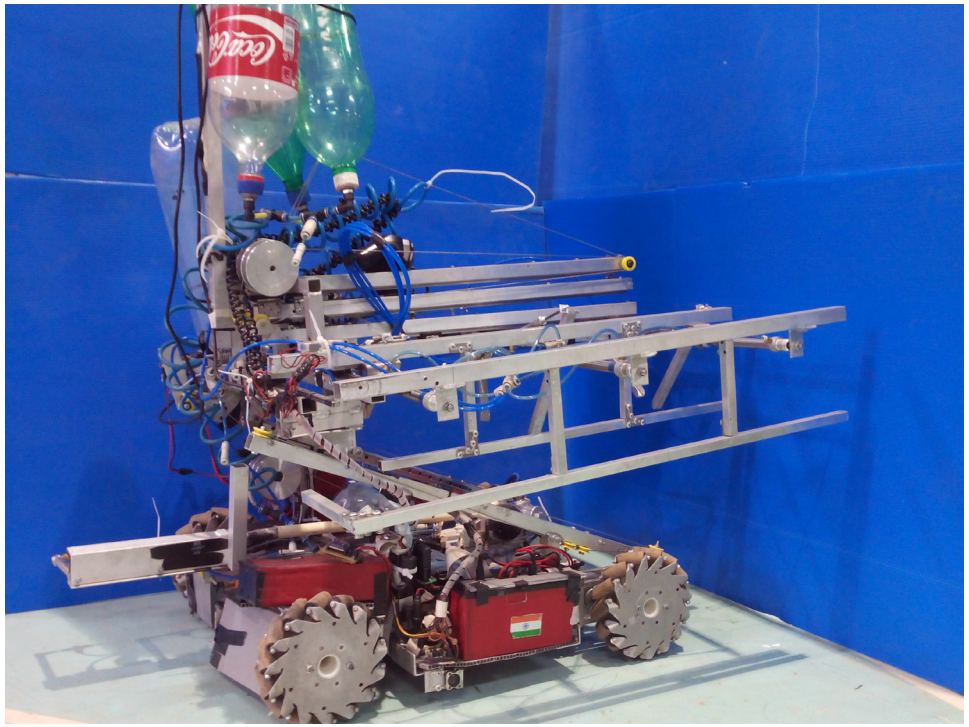
ENABLING TOUCH

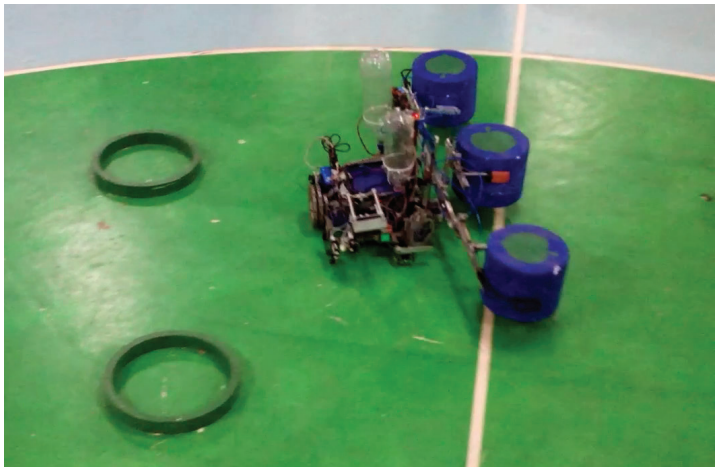
INTERACTION DESIGN

SOFTWARE DESIGN

2017

Building upon the study of exploring touch, these projects aim to leverage inexpensive and easy to use technology to make objects more interactive. The calibration tool developed allows a resistive touchscreen to be used to add single touch multi-button functionality to practically any object. You could draw anything you want on a piece of paper and bring it to life. A similar tool also allows a resistive touchscreen to be transformed into a DIY graphic tablet for your PC (though not a very practical one).





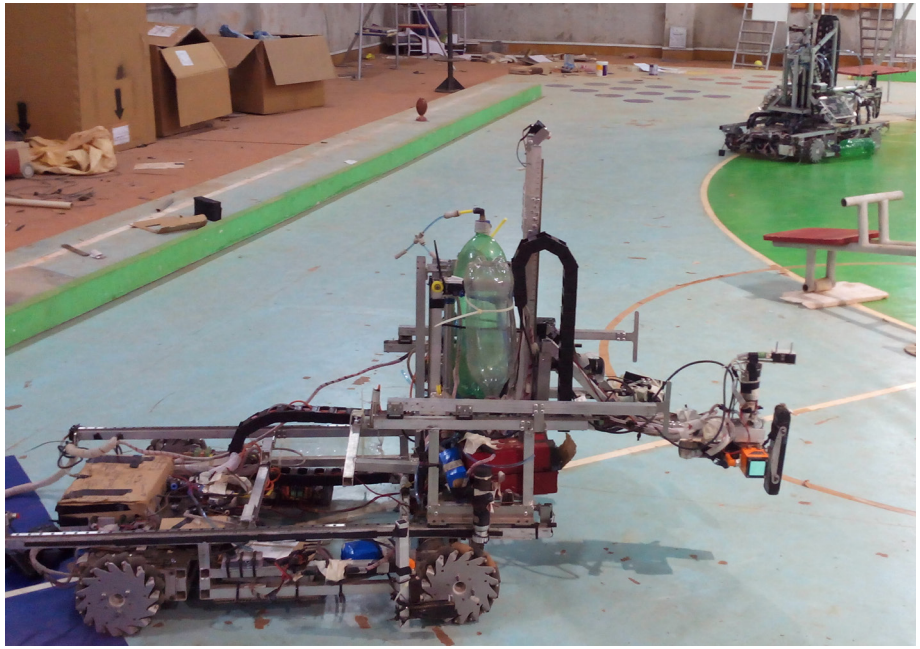
ROBOCON 2013

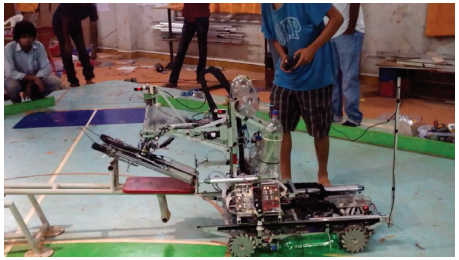
HARDWARE DESIGN

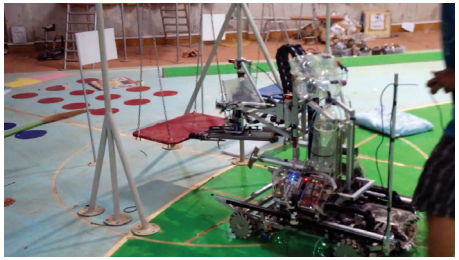
SOFTWARE DESIGN

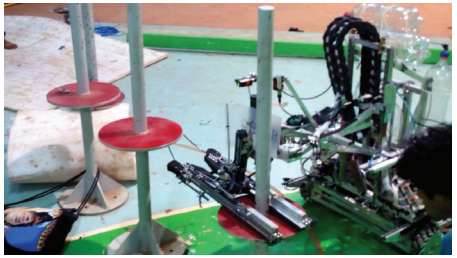
TEAM
2012 - 2013

The theme for Robocon 2013 was “Green Planet”. We built autonomous and semi autonomous robots capable of picking and placing multiple large cylindrical objects (leaves) up to an extension of five meters. These robots transferred the objects among themselves, communicated with each other during transfer (near distance IR) and were capable of dynamically changing their paths depending on situation. One of them was equipped with a pneumatic mechanism capable of reliably launching a projectile (bud) to a circular disc (moon) of 400 mm diameter at a distance of 8 meters away and 1.5 meters elevation. This was the first time an Indian team successfully implemented holonomic drive in Robocon.









ROBOCON 2014

HARDWARE DESIGN

SOFTWARE DESIGN

TEAM
2013 - 2014

This year the theme explored parenthood. Two robots had to be designed (depicting a child and a parent) which performed a variety of tasks on recreational equipment akin to a child playing on a playground. In order to complete the theme, the robots had to “play” on a seesaw, swing, pole-walk and jungle gym. This year included one of the most complex robots built by our team, featuring a gantry system with 4 degrees of freedom built on the base holonomic drive. The second robot was equipped with one of the most compact electronic control systems we have designed.

ROBOCON 2015

HARDWARE DESIGN

SOFTWARE DESIGN

MECHANICAL DESIGN

TEAM
2014 - 2015

Robocon 2015 was unusual as it was one of the few themes where the participant directly competed with an opponent. “Robominton” was a game of doubles badminton played by the robots of two opposing teams. The robots were allowed to be autonomous or manual. We tested out various methods and algorithms using Kinect v2, which detected the shuttle when it crossed over the net and predicted its path to ground. The robots then maneuvered to the estimated location to intercept the shuttle. Unfortunately, due to reliability issues, we ended up controlling both robots manually in the competition.