A B O O B A C K E R S I D I Q U E ' S | D E S I G N P O R T F O L I O

ABOOBACKER SIDIQUE

DOB: **24th February 1986**   Nationality: **Indian**   Address: **A304, Hall8, T-Kanpur**   Contact Number: **00918960419314**   e-mail: **asidique@iitk.ac.in**

EDUCATION:

INDIAN INSTITUTE OF TECHNOLOGY KANPUR
Master of Design (M. Des): Specialized in Engineering, Product and UX/XI Design

COCHIN UNIVERSITY OF SCIENCE AND TECHNOLOGY
Bachelor of Technology (B. Tech): Specialized in Mechanical Engineering

INTERNSHIPS:

HINDUSTAN AERONAUTICS LIMITED
Worked with the Design team and made a study on design of various Aircraft Landing Gears.

INDIAN SPACE RESEARCH ORGINIZATION
Worked on Design of High Speed Turbine Drive for Dynamic Seal and Bearing Test for Rocket Engines.

WHAT IS DESIGN TO ME:

PASSION SKILLS AND IDEAS

WITH A CLEAR VISION

ARTTISTIC APPROACH

RESEARCH

PLANNING AND CONSTRUCTION

HUMAN EXPERIENCE

imaginatively **CREATE** a **FINISHED WORK** which properly portrays THE ORIGINAL **CONCEPT**

WORK EXPERIENCE:

NATIONAL WIND TUNNEL FACILITY IIT KANPUR
RESEARCH ASSOCIATE: Worked with Design and Analysis Team.

GULF OIL AND GAS LLC, ABU DHABI, UAE
PROJECT ENGINEER: Worked in offshore oil platform of ZADCO (ADNOC) with fabrication team as a site engineer and team leader

SKILLS:

Visual and spatial awareness **Capability to produce User Centered Design** Strong technical and creative skills Commercial awareness **IT skills** Communication and interpersonal skills Presentation skills Team working skills Ability to work independently and to **show initiative** Awareness of appropriate materials and production processes **Awareness of current design trends** Research skills

SOFTWARE SKILLS:

NX UNIGRAPHICS	★★★★★★☆
RHINOCEROS	★★★★★★☆
AUTODESK-AUTOCAD	★★★★★★★
AUTODESK-INVENTOR	★★★★★★☆
AUTODESK-3DS MAX	★★★☆☆
SOLIDWORKS	★★★★☆
CATIA	★★★☆☆
ADOBE PHOTOSHOP	★★★★☆
ADOBE ILLUSTRATOR	★★☆☆☆
MSC PATRAN	★★☆☆☆
MSC NASTRAN	★★☆☆☆
MSC ADAMS	★★★★☆

PROGRAMMING LANGUAGES:

LABVIEW	★★★★☆
MATLAB	★★★☆☆

WORKSHOPS ATTENDED:

TED-MINT Workshop conducted by **KTH, Royal Institute of Technology, Sweden**

PRODUCT ECOSYSTEM:
By **Mr. Raghu Kohli** (Director Innovation Workshops)

SHELTER ON A DESERT ISLAND:
By **Dr. Ralf Weber** (Professor-Dresden University of Technology Germany)

Workshop on **TYPOGRAPHY:**
By **Dr.Udayakumar** (Professor-IIT Guwahati)

USER EXPERIENCE DESIGN:
By **Mrs. Jhumkee Iyenger.** (Consultant User Experience Strategy & Design)

ACHIEVEMENTS:

- Featured **Artist** in a major Asian online art gallery called **artyii.**
  Link: http://www.artyii.com/Myartyii-AboobackerSidique

- Won Prime'83-IIT Kanpur Logo Design Competition.

- Participated in Velvetlock-Ridhambara, National level fashion show competition at IIT-Kanpur.

LANGUAGES KNOWN:

Malayalam	★★★
English	★★★
Hindi/Urdu	★★★
Arabic	★☆☆
French	★☆☆
Tamil	★★☆

ACTIVITIES:

PlayingGuitar   Creating Art   Photography   Reading
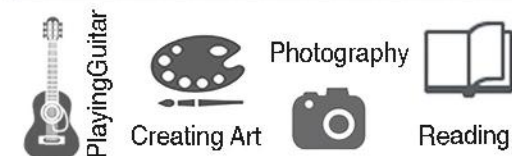
PRODUCT DESIGN

ABOOBACKER SIDIQUE'S PORTFOLIO

PD

Multi-Lensed Camera

01 ToxoBOT

Wireless Controlled Toxic Gas Detecting Robot

WHY?

In any hazardous work environment like Oil & Gas Platforms, safety of human life is an important concern. Toxic hydrogen sulphide gas can pose significant risks to personnel. Gas detectors are therefore essential to provide dependable early warning of gas hazards. Anthropogenic releases of H_2S into the air result from industrial processes, primarily from the extraction and refining of oil and natural gas. A rotten egg odor characterizes H_2S at low concentrations, and is odorless at higher concentrations. A level of H_2S gas at or above 100 ppm is immediately dangerous to life and health.

WHERE?

Oil & Gas Platforms.

HOW?

Two different designs in which the first one is a Flying Robot which have three motored propeller. And the second one is a Wheeled Robot. Both these robots are remote controlled. It has a multi-lensed camera and gas sensor attached to it through which the amount of Toxic gas can be measured. The signals from the gas sensor is sent to a monitoring device (computer).

Propeller

Gas Sensor

FRONT VIEW

Motor

CONCEPT GENERATION
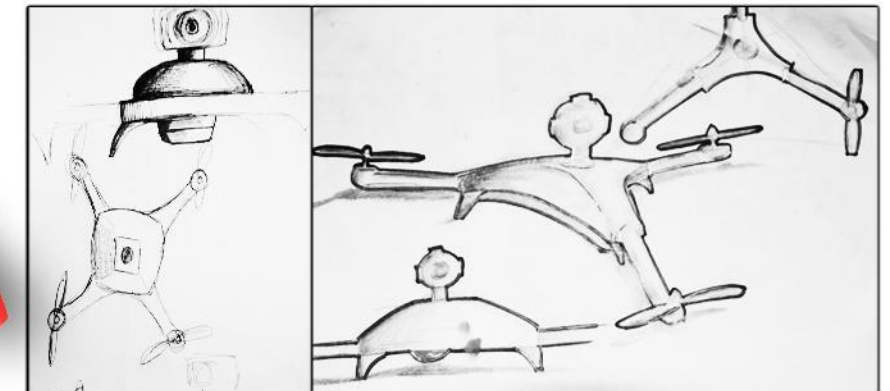
ToxoBOT Design Concept 1: Flying Robot which have three motored propeller. It is remote controlled. It has a multi-lensed camera and gas sensor attached through which the amount of Toxic gas can be measured.

ToxoBOT

ToxoBOT Design Concept 2: Wheeled Robot . It is remote controlled. It has a multi-lensed camera and gas sensor attached through which the amount of Toxic gas can be measured.
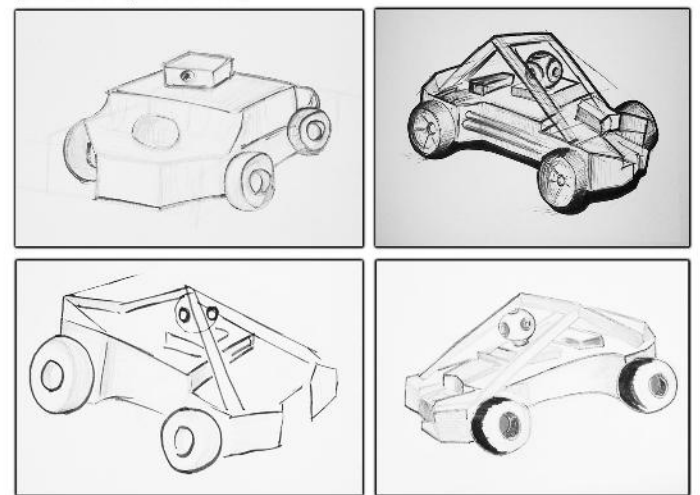
Multi-lensed Camera

TOP VIEW

SIDE VIEW

CONCEPT GERNEATION
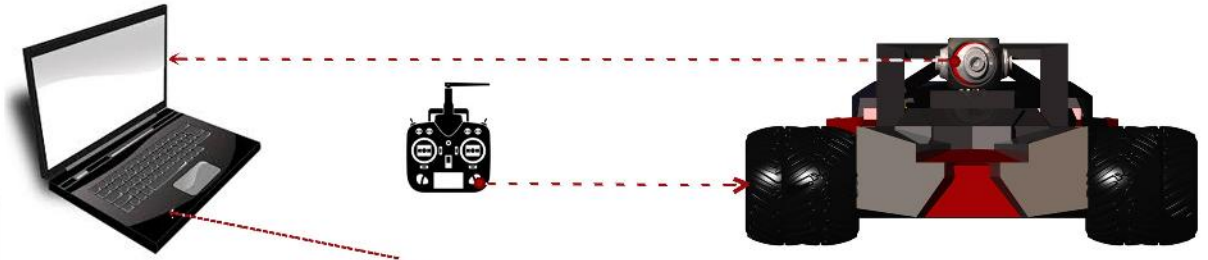
FRONT VIEW

Gas Sensor

Signal flow direction

Top hut shaped panel with reflector

Cylindrical LED panel

Top panel Height adjustment bar

Base plate with LED and reflector

Power Switch

Solar panel with adapter

02 SAMARITAN PHOTOTHERAPY UNIT

New Phototherapy Unit **Design** for New Borns suffering from Hyperbilirubinaemia.

WHY?
Neonatal jaundice or Neonatal hyperbilirubinemia, is a yellowing of the skin and other tissues of a newborn infant.
Major key points considering before initializing the concept derived from the need statement of the New Phototherapy Units Design for Neonatal jaundice treatment are,
1. It should be portable.
2. Acquires less space.
3. Mother can sit alongside the Phototherapy unit to breastfeed whenever required.
4. Cost effective.
5. Should consume less power.
6. Should run on AC, DC, and Solar device. (Better for Rural India)

WHERE?
Hospitals and Homes of Rural and Urban India.

HOW?
This New Phototherapy Unit design has a detachable top mount with reflectors (to reduce the wastage of the irradiance to the maximum) which can form a hut shape when attached. The square tub shaped base provided with reflectors and LED arrays in the inside bottom. The child will rest above the bottom LEDs at a minimum distance on a transparent glass or acrylic sheet which will allow reflected light to pass through. The top shield which is height adjustable can also be folded and packed with the base as a box which provides portability.
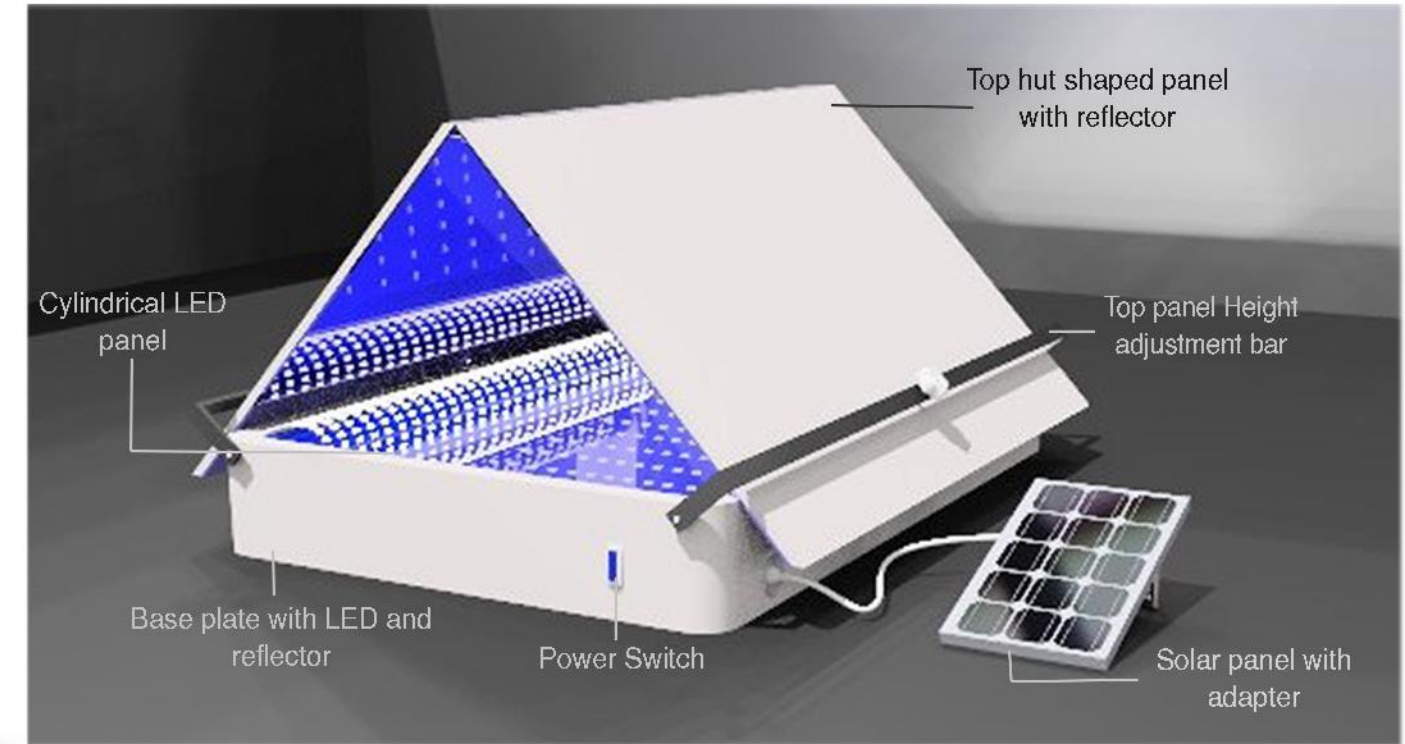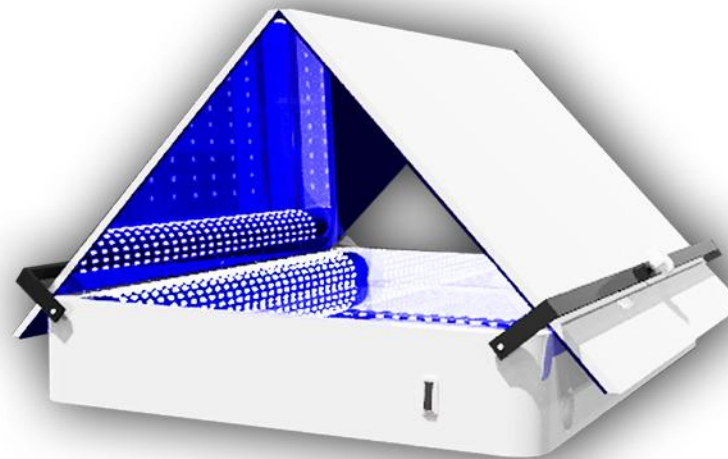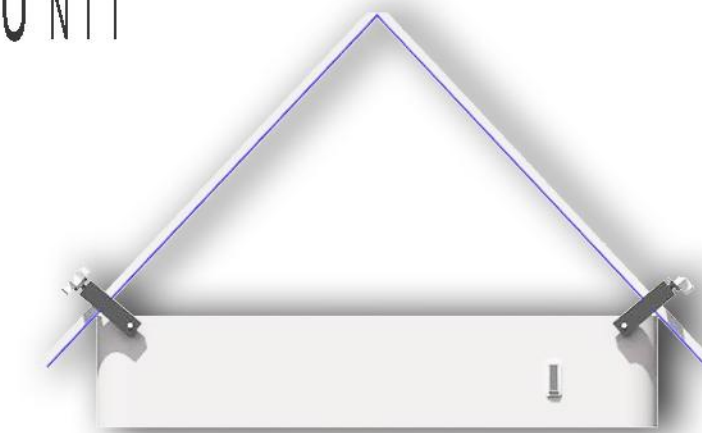
THE WORKING PROTOTYPE WITH LEDs, TOP-SHIELD WITH REFLECTORS AND HEIGHT ADJUSTING MECHANISM ETC..
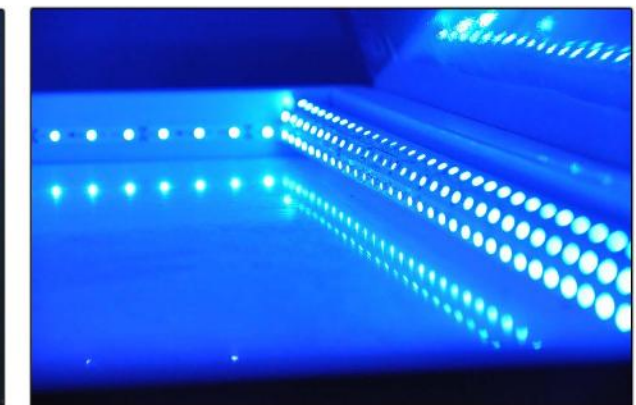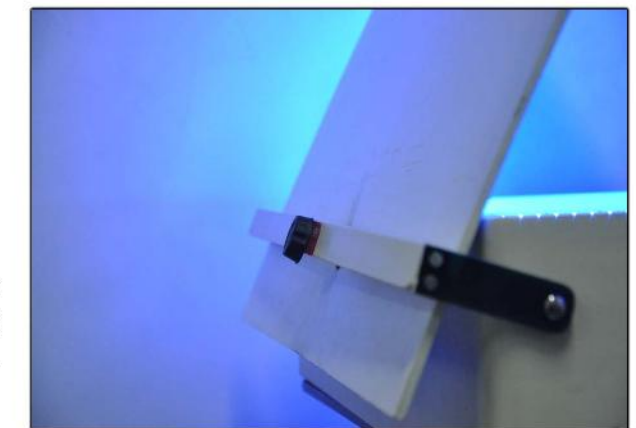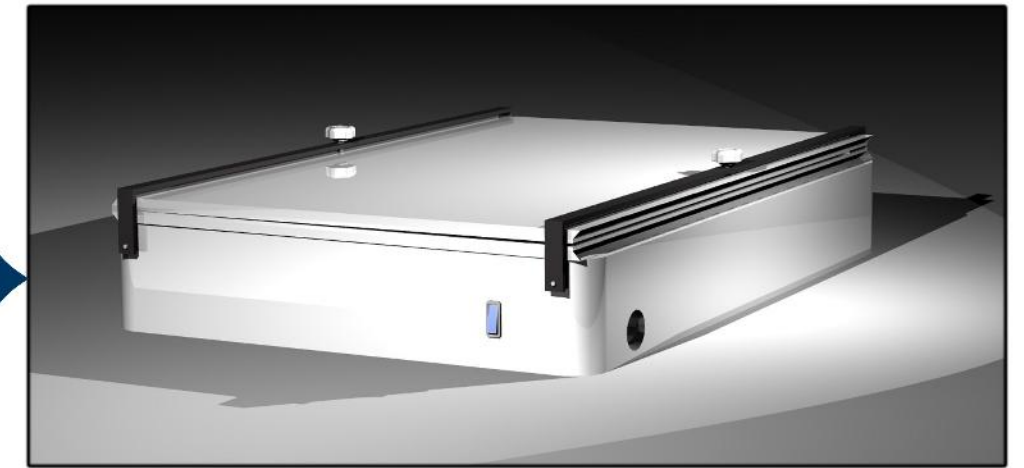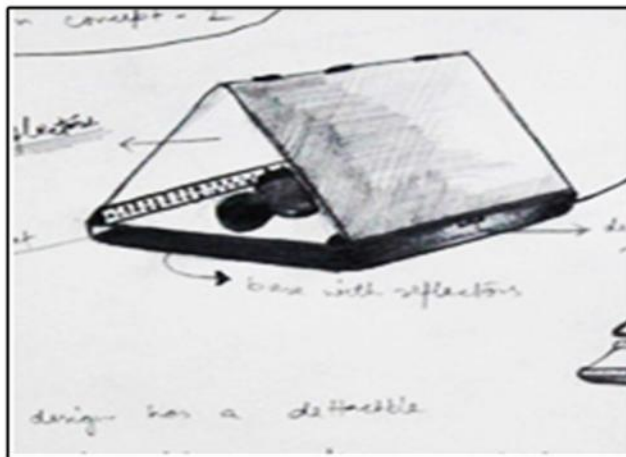
Samaritan Phototherapy Unit
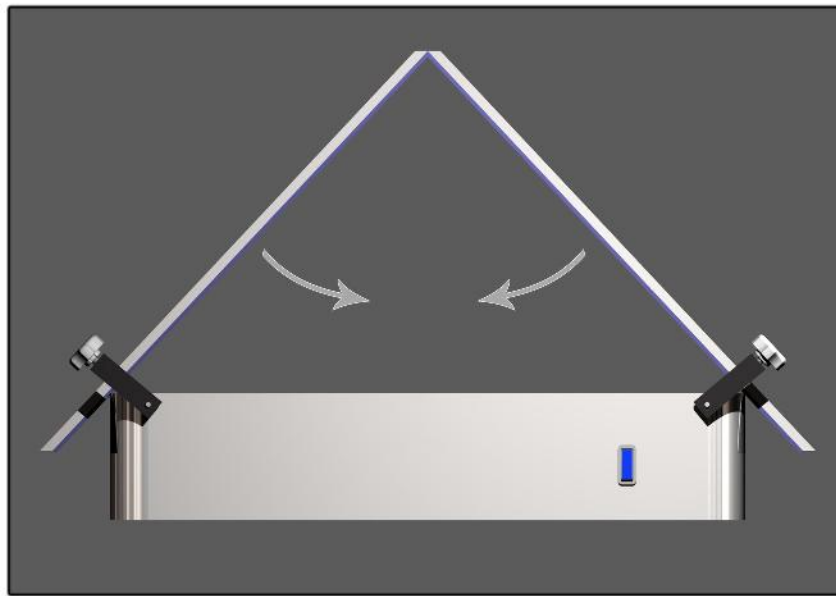
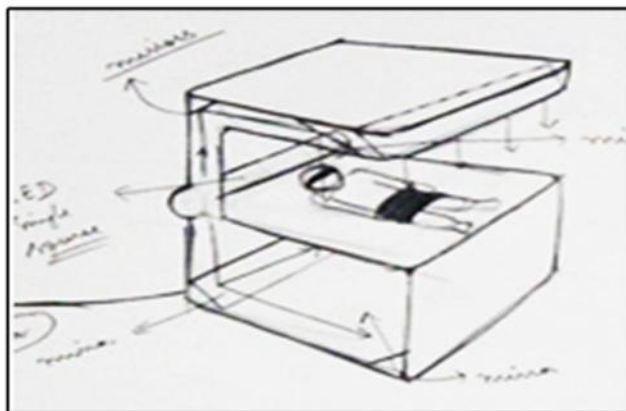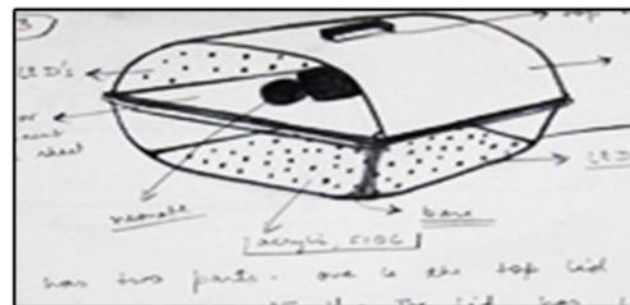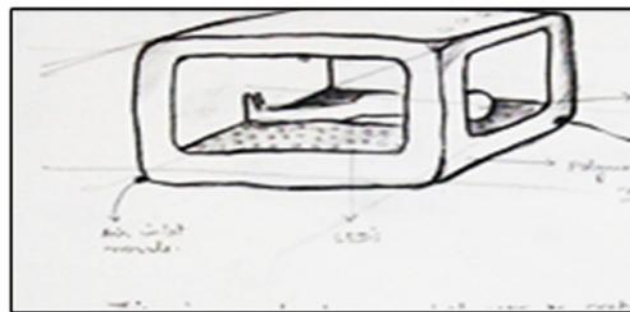Phototherapy Unit with The Top Shield attached
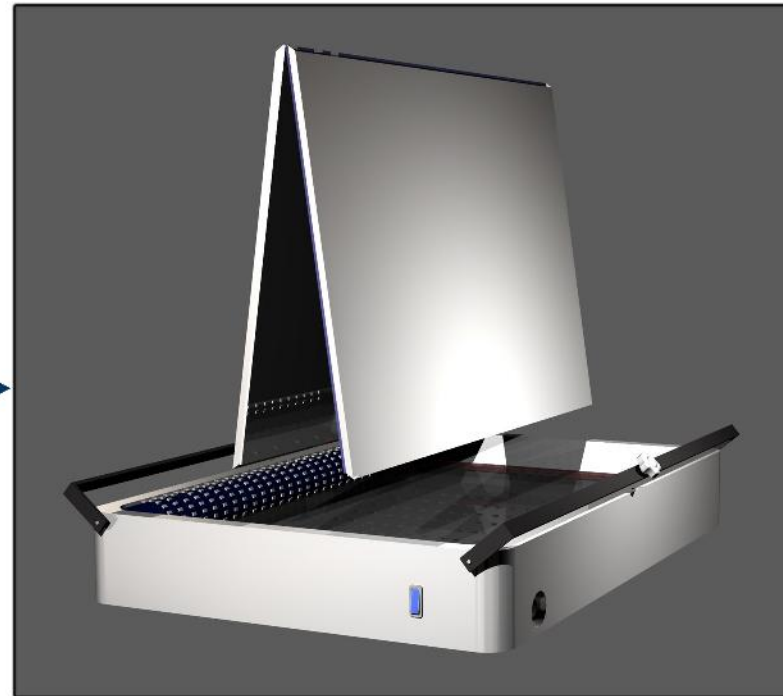
Top Shield detached and in half folded position

Top Shield completely folded, placed on top of the base and clamped.

Concept Generation

The Tinkering Process of the Final Prototype

Support

Logarithmic Spiral Turbine Blade

Power Generator

Base

TOP VIEW

03 SAVONIUS VERTICAL AXIS WIND TURBINE

A new Renewable Power Generation Solution

WHY?

The utilization of wind energy for power generation purposes is becoming increasingly attractive and gaining a great share in the electrical power production market worldwide. The aim of the project is to develop a new design of a Vertical Axis Wind Turbine for rural/costal area, targeting individual homes, farms, or small residential areas as a way of providing local and personal wind energy.

WHERE?

Rural and Urban India.

HOW?

The idea is to design a Vertical Axis Wind Turbine which can be installed in the roof top of building. The turbine is planned to be designed in such a way that the cross sectional area of the blades will get reduced from bottom to top, so that it can also pull the air from the ground and make the area cool.

Hot fluid (Air) from ground flowing up and cooling the surface

FRONT VIEW
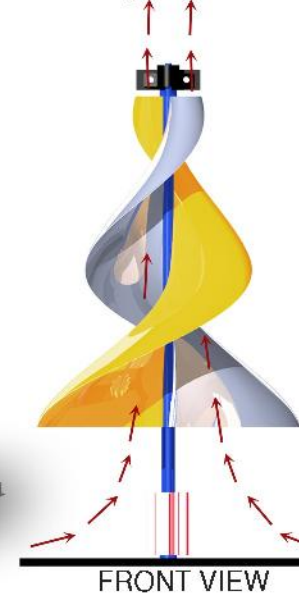
PERFORMANCE TEST OF THE WORKING PROTOTYPE
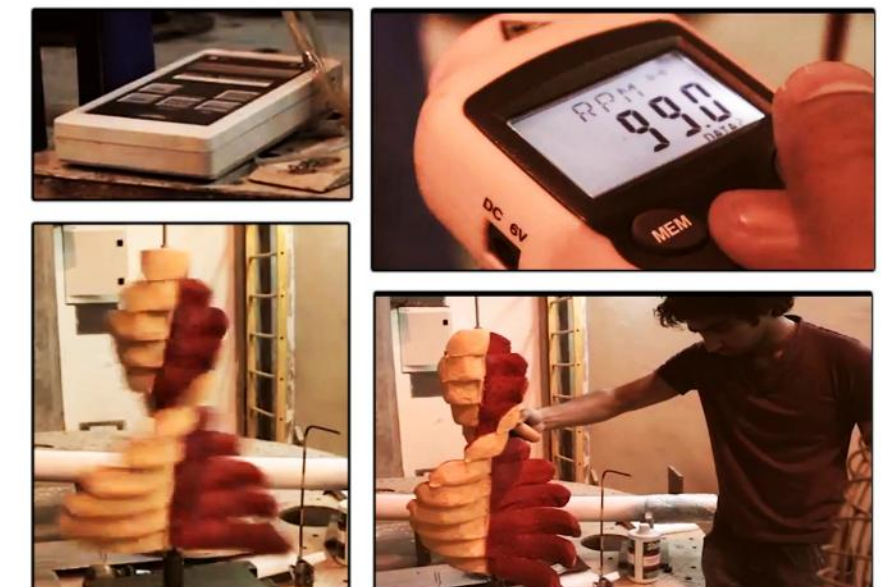
Test:Determined efficiency of the Wind Turbine. Obtained the speed of revolution for various wind speed using Tachometer. Free stream velocity was measured using a pitot tube and a manometer.

04 OCTA-GAME

A **Board Game**

MOTIVATION
• The motivation for the game came from the fantasy stories of Knight hood and the battle field wars.
• Right from the beginning of the game, the opponents face each other like a one to one war, they kill the enemy so strategically that the players get an actual feel of Knight hood fighting , they attack with mutual planning to occupy a kingdom.

INITIAL PROTOTYPE , TESTING AND REFINEMENT
• Before coming to the actual game, conducted many survey of existing games and after brainstorming made a test prototype.
• We found certain fallacies with the first prototype that the games were becoming less interesting after a particular period.
• So we came up with such a design solution that all the games are not only interesting from the beginning but also have the same effect till the end.
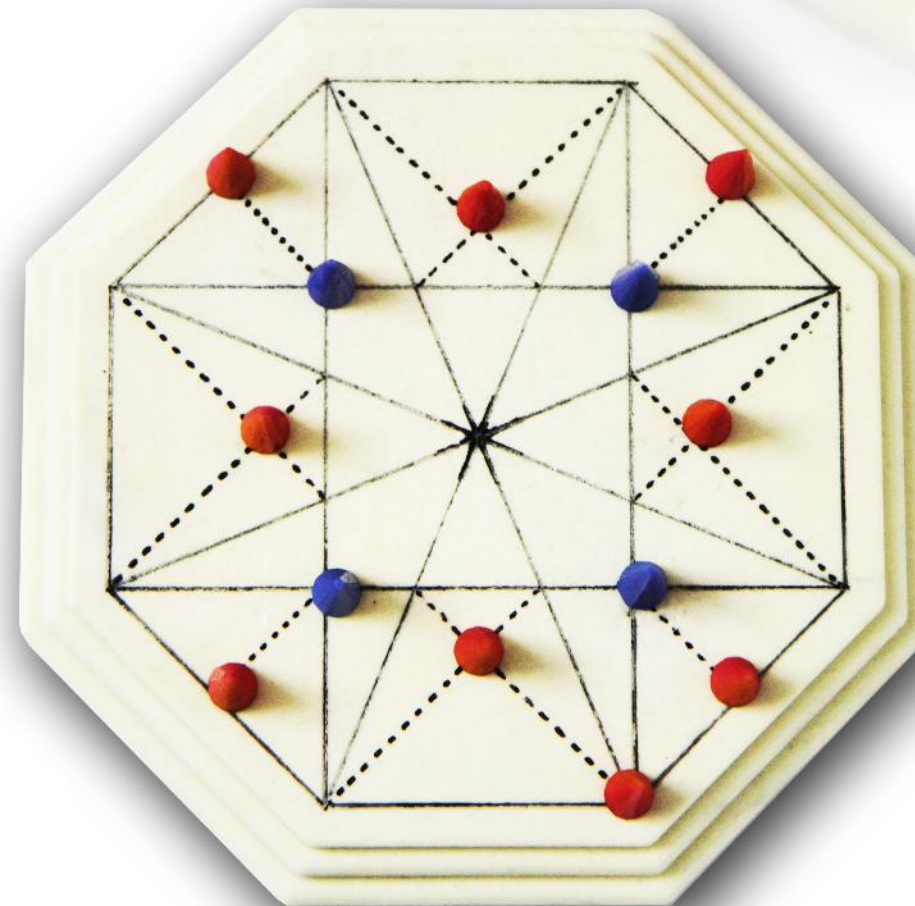
GAME 1:

1. The arrangement is as shown in the figure.
2. The objective of the blues is to kill the king (the violet coin in the center).
3. Inorder to kill the king the blues has to jump over it.
4. And the objective of the reds is to block and not to allow the blues to kill the king.
5. The blues win when any of them kill the king and the reds win when it blocks completely.

GAME 2:

1. The arrangement is as shown in the figure.
2. The objective of reds is to reach the center by taking one step in any direction.
3. The objective of blues is to block and kill the reds.
4. The blues can kill the reds by jumping across them
5. the reds wins if five of them are in the center.
6. blues win if he kills five of the reds.

GAME 3:

1. The arrangement is as shown in the figure.
2. The objective of each player is to occupy the opponent's side.
3. Each player can move only one step forward.
4. After getting hold of any of the opponent's position you can lock and cant move further.
5. If you block all of the opponent's moves you can keep on occupying the opponent's base position till he is able to move.

GAME 1

GAME 2

GAME 3

Leg

Torque Link Assy.

Wheel

Shock Strut

Axle Housing

'CAD MODEL OF DORNIER DO-228 AIRCRAFT LANDING GEAR' DEVELOPED FOR UNDERSTANDING THE DESIGN AND ALSO FOR USING IN VARIOUS SIMULATIONS.
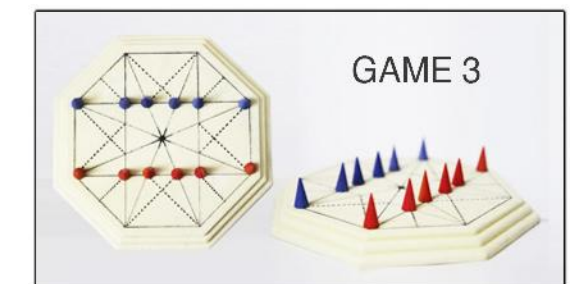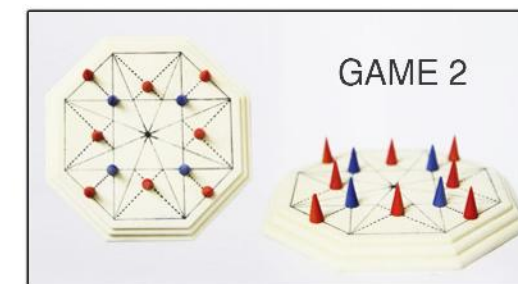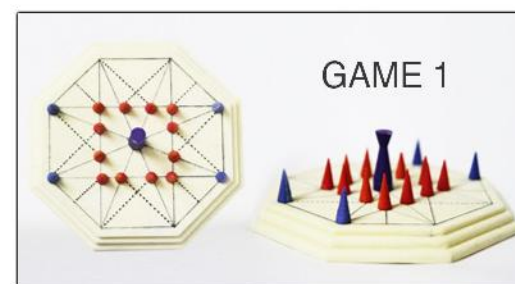
05 AIRCRAFT LANDING GEAR HEALTH MONITORING SYSTEM

Case Study: **Dornier Do 228**
In collaboration with **Hindustan Aeronautics Limited**

WHY?

The two major reasons for the failure and aircraft mishaps are due to Hard landing and improper fluid level within the landing gear Shock Strut.

The rate of pressure increase within each strut is proportional to the rate of strut compression. The compression rate of the strut identifies the collapse rate of the landing gear strut. The collapse rate of the landing gear strut is the vertical sink speed of the aircraft, as it makes initial contact with the ground.

It indicates a Hard Landing when pressure exceeds a predetermined aircraft value shortly after wheel on weight indication. And if the pressure indicated is less than the predetermined value then it indicates an improper lower fluid level within the landing gear and it can be due to the fluid leakage (either Hydraulic fluid or N_2 gas).

HOW?

Method to monitor the Aircraft hard landing and fluid level within the Shock strut:

By using an accelerometer the dynamic acceleration force of the aircraft shock strut while landing can be obtained. From collected data the distance traveled by the shock strut at various time from the touch down to the static position can be determined.

Hard Landing: If the fully compressed value is more than the predetermined value and the static compressed position is matching with the predetermined static position.

Improper fluid level within the shock strut: If the fully compressed value is more than the predetermined value and also the static compressed position is also more than the predetermined static position.

DATA RECEIVED FROM THE ACCELEROMETER ATTACHED TO THE LANDING GEAR SHOCK STRUT .
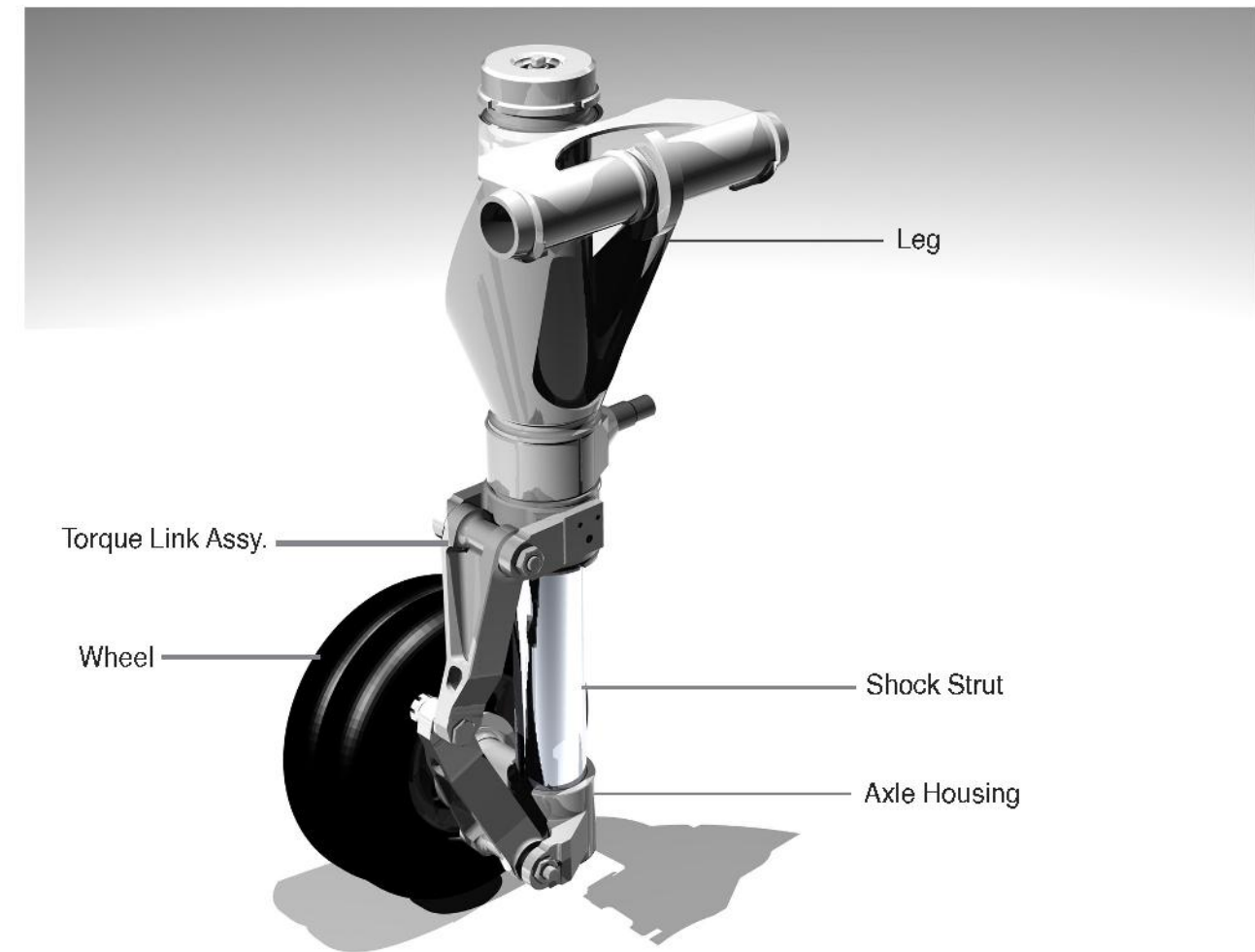
MULTIBODY DYNAMIC SIMULATION OF DORNIER DO-228 LANDING GEAR USING MSC ADAMS FOR DETERMINING THE SHOCK STRUT FLUID STIFFNESS COEFFICIENT.
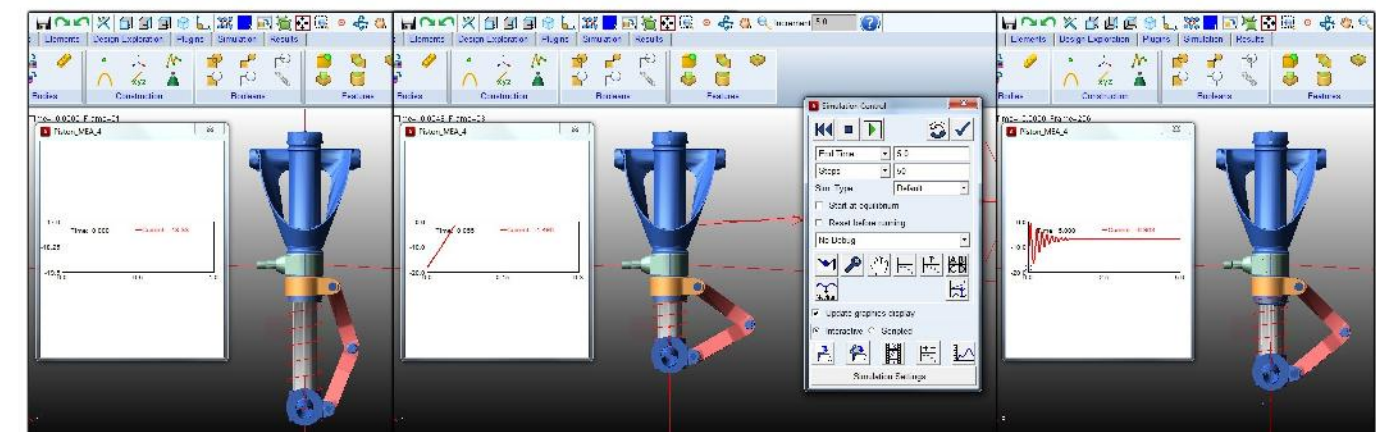
Fully Extended Position

Fully compressed Position

Static Position

New Hand Cart Design

Roof

Arrays for segregating vegetables

Seat

Seat support

Extension to accommodate more vegetables

Base storage area

06 NEW HAND CART DESIGN

New Vegetable Hand Cart for the bottom of the pyramid.

DESIGN PROCESS:

Started with understanding how the life of a hand cart user is and how the cart affects his earning and life. The specific needs were identified and then converted to the requirements i.e. specific design problems were listed. The design solutions were thought of and then refined to get an optimum design proposal which tends to solve the everyday problems of Hand Cart users.

THE DESIGN SOLUTION:

The Design proposal have many design features which catered to the basic needs of the hand cart users which included a foldable seat for comfort, extendable drawers and enclosed racks for better space utilization, etc. But the important point kept in mind while suggesting and proposing the features was that it was being designed for and is to be used by the Bottom of the Pyramid, and thus it has to defend itself on the financial grounds apart from technical feasibility. Thus considering all the Final Design was proposed.
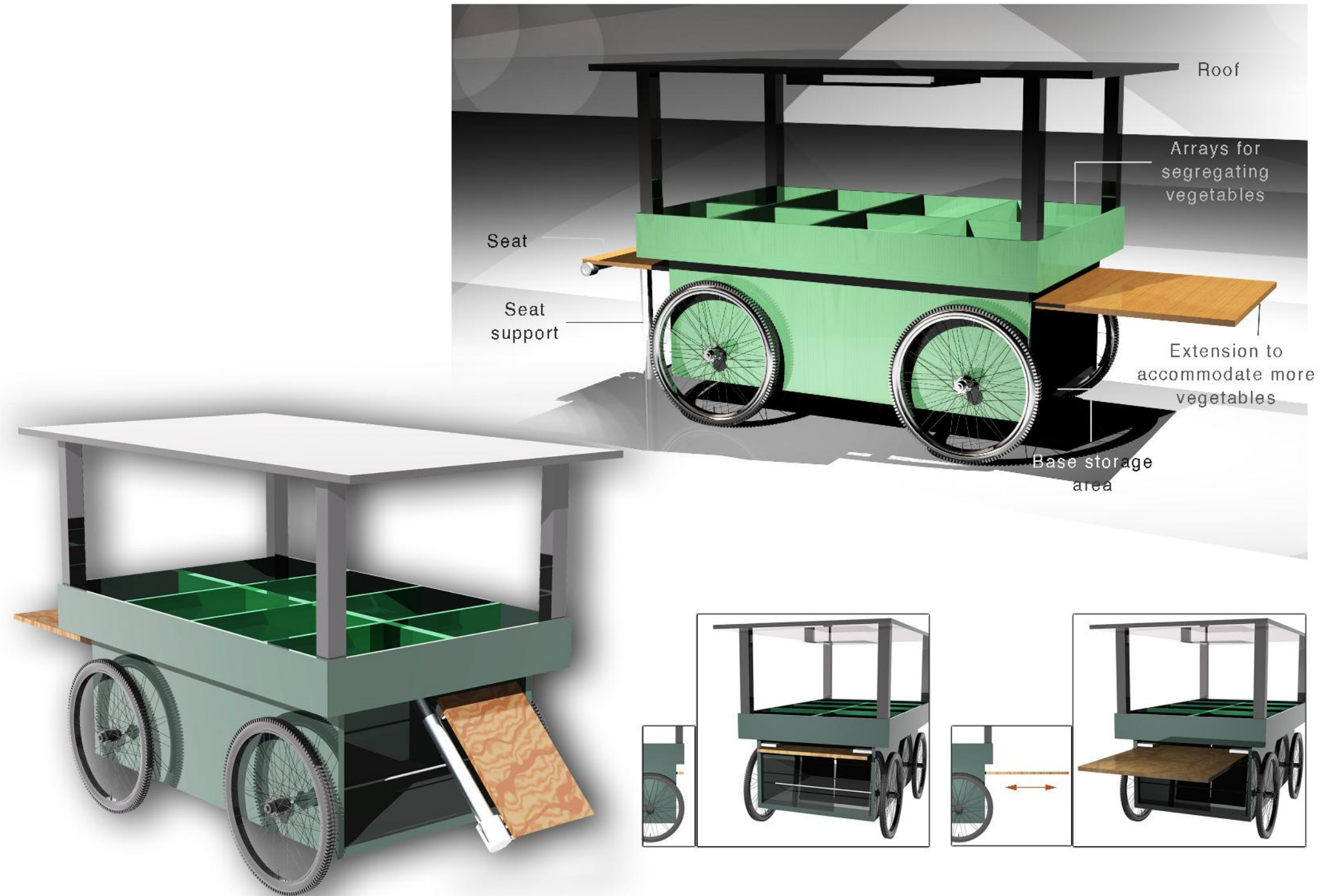
CONSEPT GENERATION
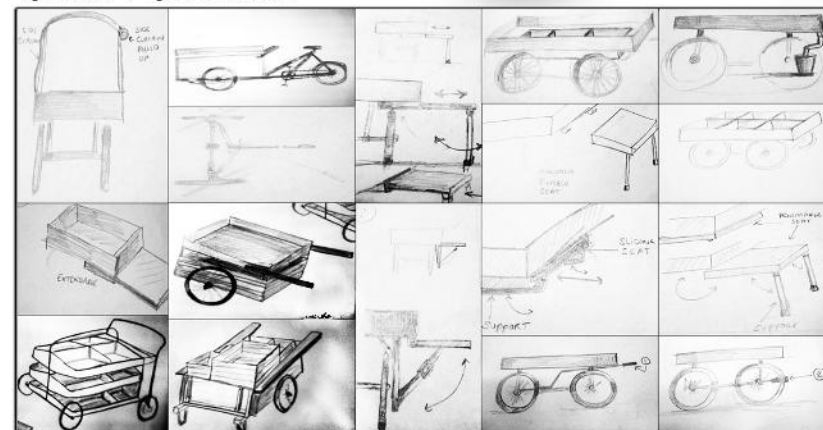
An **alternativ Design solution** for MAV controls.

WHY?

Micro Air Vehicle (MAV) is a small, portable flying vehicle which is designed for various purpose. Most of these use small servomotor as an actuator in the flight control system. Servos are quite lightweight and have acceptable power consumption, but occupy significant volume, and are less reliable than desired. On small vehicles operating at low Reynolds numbers, flow separation over conventional flap or aileron surfaces is responsible for large portions of the overall vehicle drag. A piezoelectric material actuator has the potential to address several of the disadvantages of the servomechanical devices. The Piezo-actuator more reliable, has no moving parts and is integral with the skin, so the volume of the actuator is negligible.

HOW?

The way to create piezoelectric actuator is to put electrodes on just one side of the PVDF (poly vinylidene Fluoride) sheet and glue them so that the poled directions are in the opposite direction. The electrodes are on the outer sides of the bimorph and the electric field is applied across the entire as shown. When an electric field is applied across a bimorph one of the PVDF sheets expands while the other shrinks causing the bimorph to bend. Thus by providing two such bimorph on both edges of the MAV flap and when an electric field is applied on both can produce the flapping action and thus it will will act as an actuator.

SKETCHES

MAV Wing

Flap

Piezo-electric actuator

PVDF

Epoxy

Electrode

Laminated section view of
Piezoelectric actuator

sectional view of
Piezoelectric actuator

Expantion and contraction of upper and
lower PVDF layers of the actuator
when the electric field is applied.
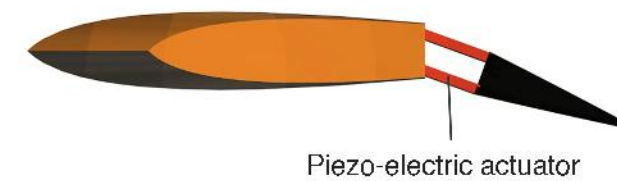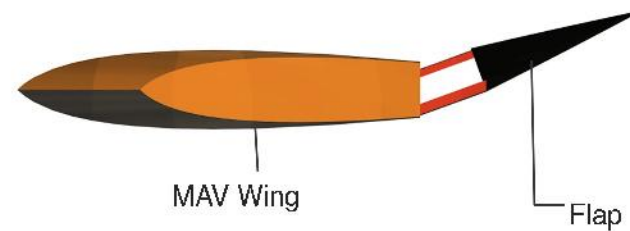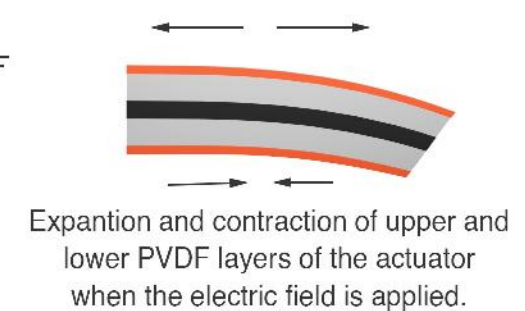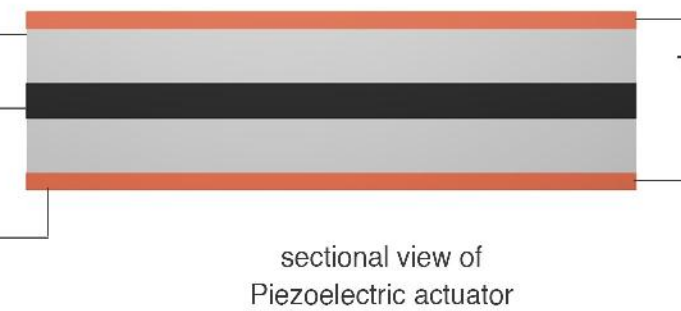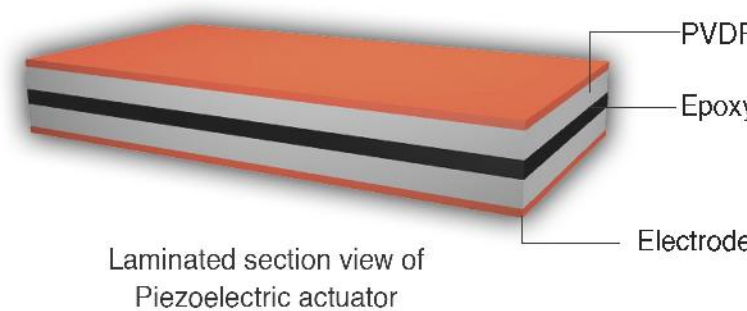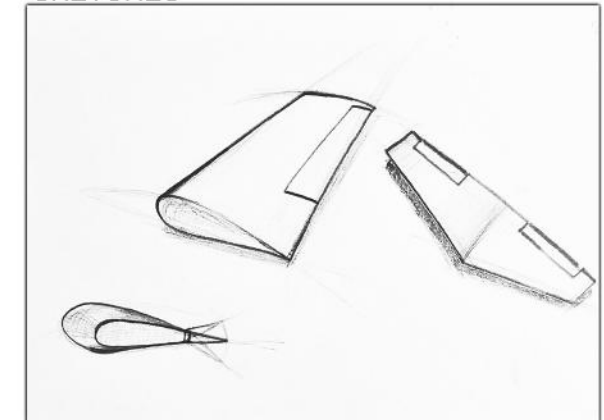
08 BICYCLE RE-DESIGN FOR USER SAFETY

As a part of **TI Cycles - Bicycle Design Workshope.**

WHY?
One of the major reasons for the Bicycle Accidents is the loss of balance while taking a turn, and it mainly happens with kids. Around 75% of fatal or serious Bicycle Accidents occur in urban areas. 75% happen at, or near, a road junction. 80% occur in daylight. 80% of cyclist casualties are male. About 18% of the cyclists killed and injured are children

The parameters concentrated on while developing and finalizing the concept was 1) Line of contact of the rare tire 2) surface roughness of road 3) surface area 4)balance.

THE DESIGN SOLUTION:

The proposal new Bicycle Design have two parallel rare wheels instead of one which is connected to the frame of the Bike with a linkage mechanism. The twin wheel increase the line of contact. The linkage mechanism will allow both the wheels to stay parallel to each other while in all conditions. By this it provides the cyclist more balance while taking a turn or while riding on a bumpy roads.

DEMONSTRATES THE LINKAGE MECHANISM OF THE RARE WHEELS AND HOW IT KEEPS THE WHEELS PARALLEL TO EACH OTHER
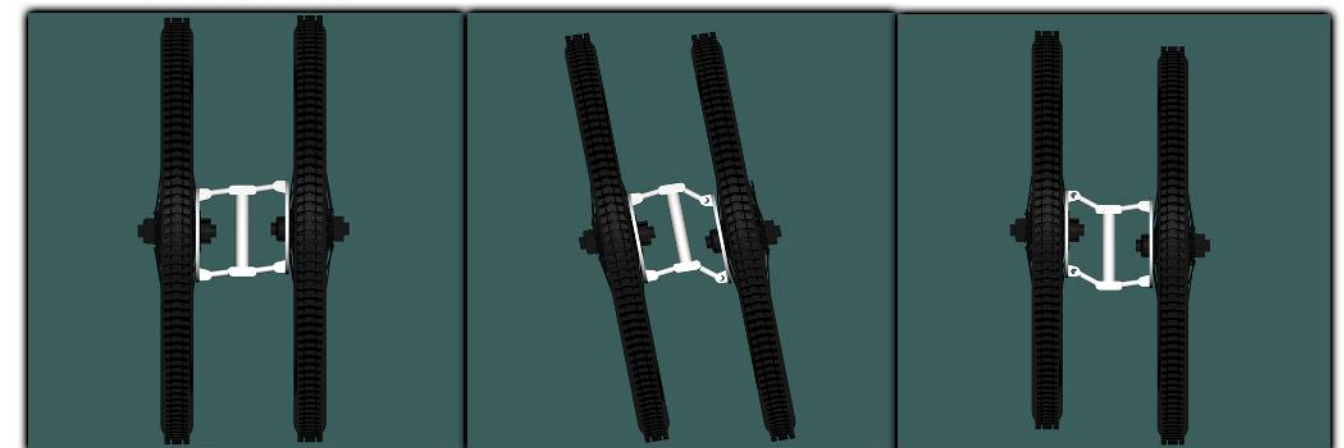
On a Plane Road

While Taking a Turn both Wheels are Parallel to each other

On a Bumpy Road

PACKAGING SOLUTIONS

As a part of **TED-MINT** Design Workshop conducted by **KTH, Royal Institute of Technology, Sweden**

OTHER TEAM MEMBERS.

Arunima V J - Communication Design student, **IIT Guwahatti**, India

Mariam Tsiklauri - Architecture student, **Iliauni**, Georgia

Szymon Nowak - Finance student, **Jönköping University**, Sweden

BACKGROUND
Task for our team was provided by **DS Smith** and considered issues with **flat packaging** used in various industries. Our main goals were to create a package:

· Would be possible to assembly by one person
· Assembly time would be reduced
· Corners and sides would be protected
· Potential shocks during transport would be reduced
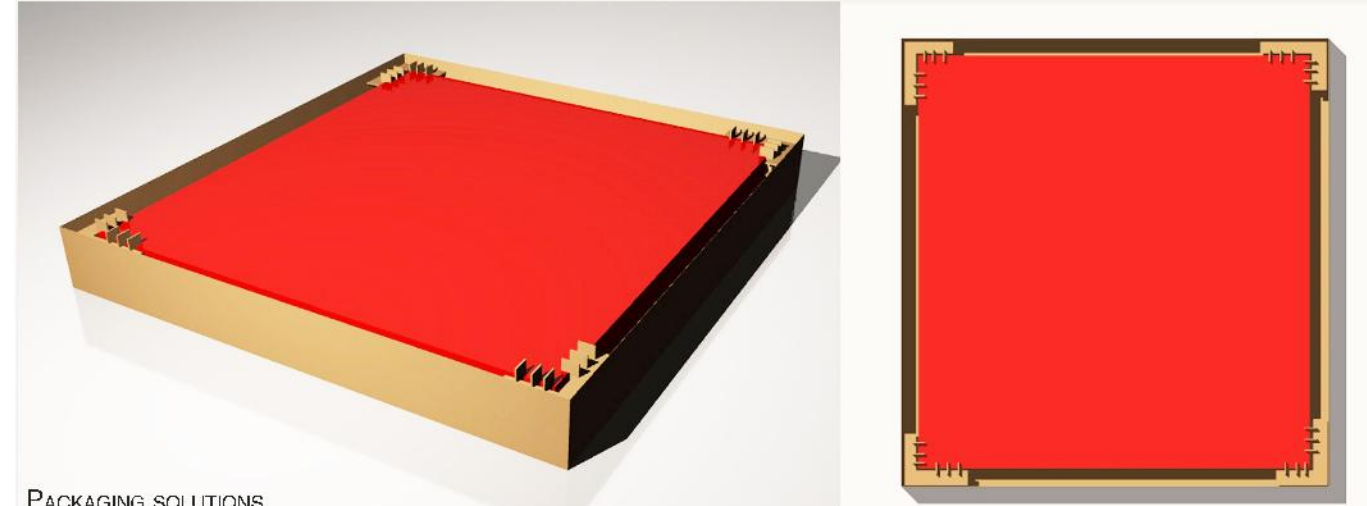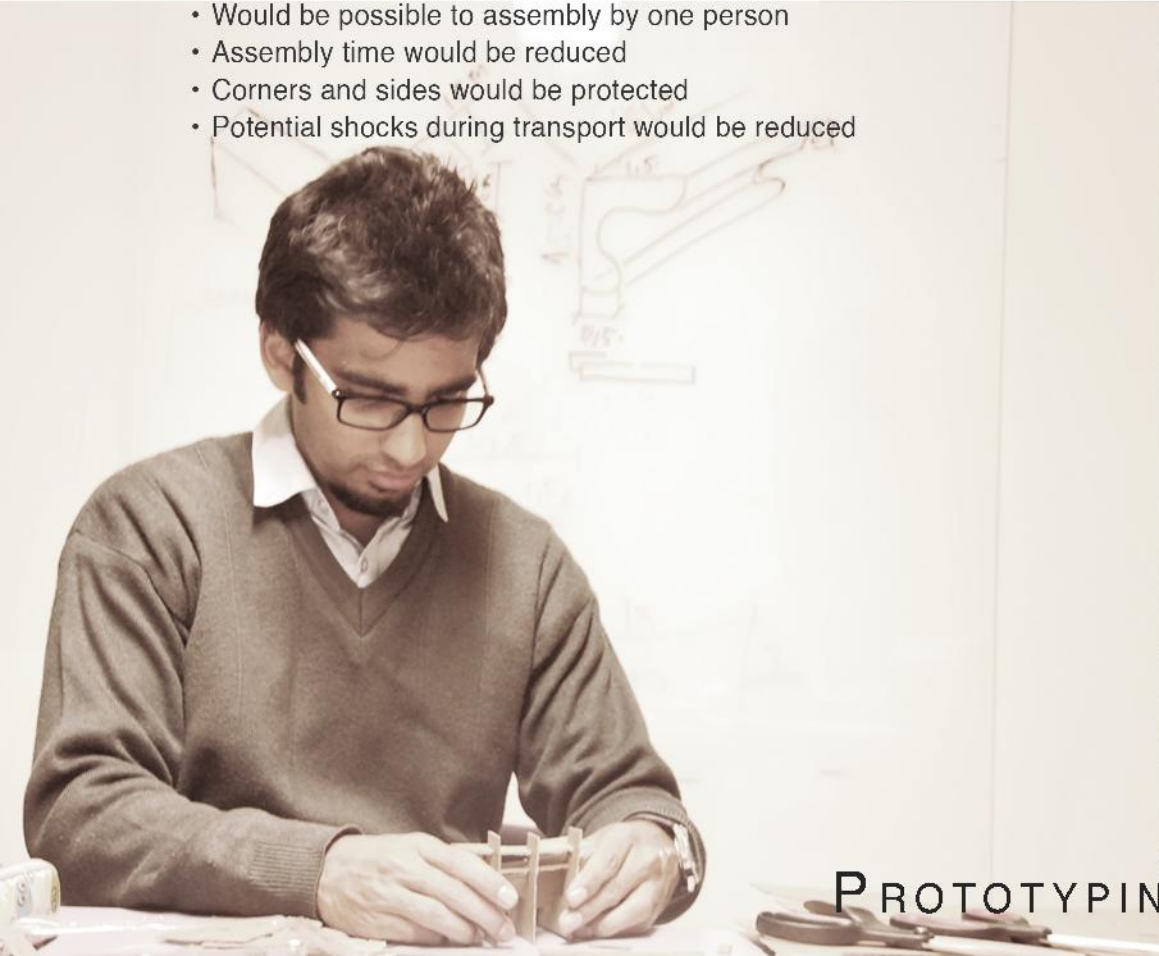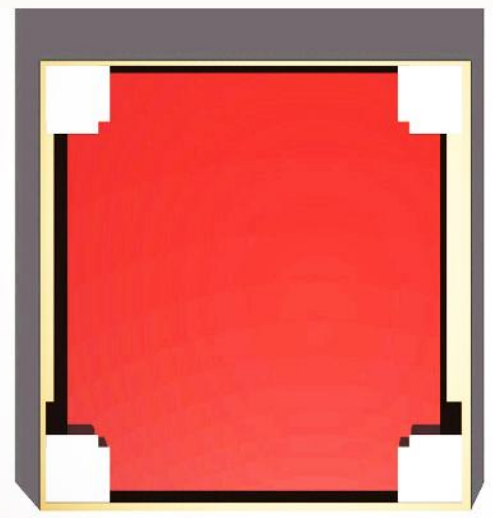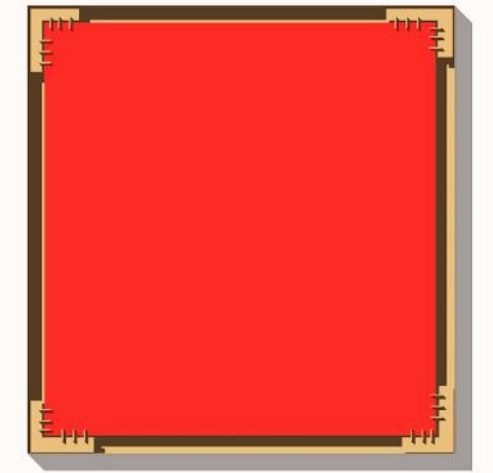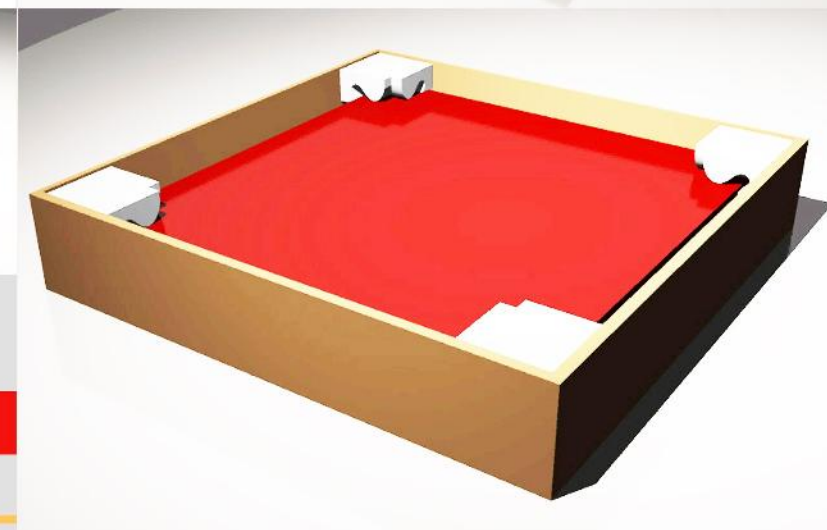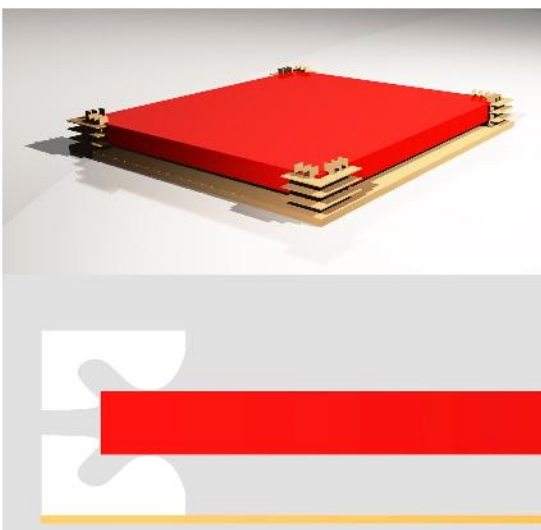
Work Presentation
and
Prototype Exhibition

PROTOTYPING

UX/UI DESIGN
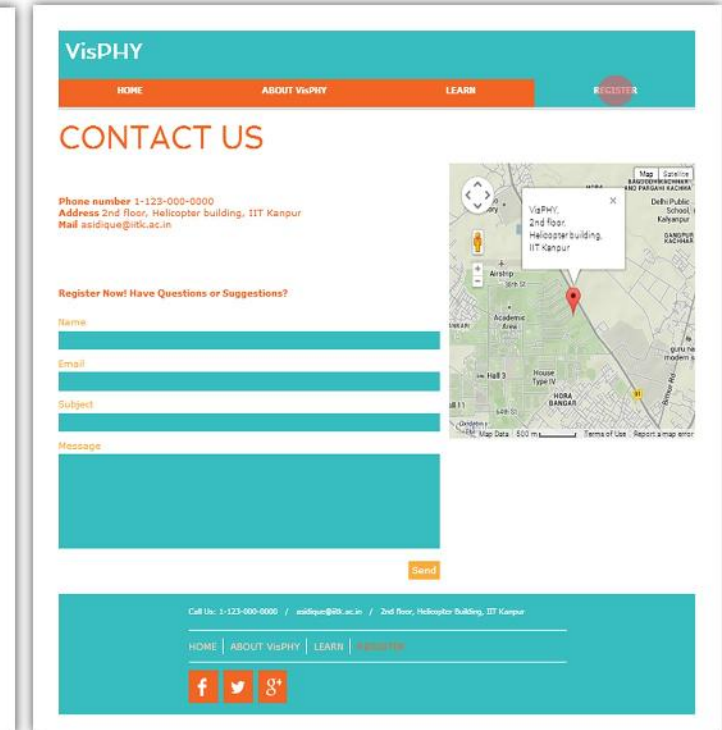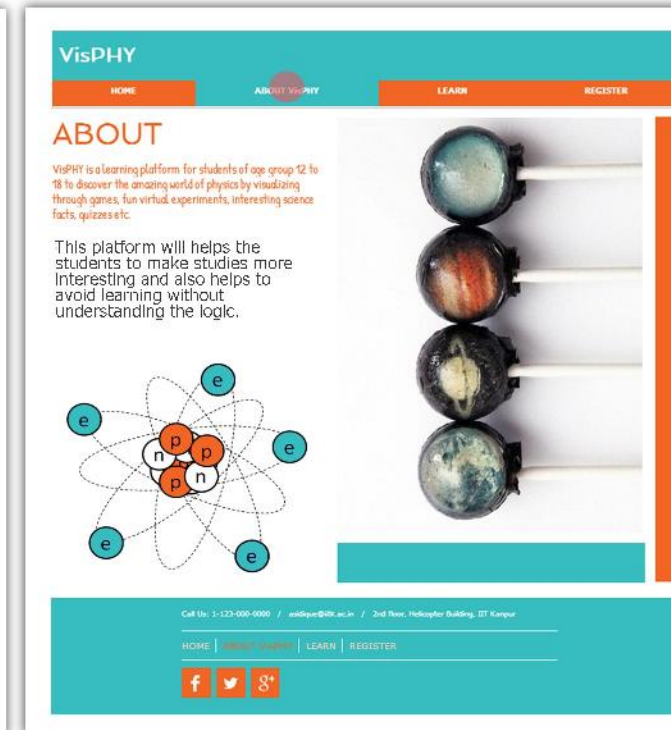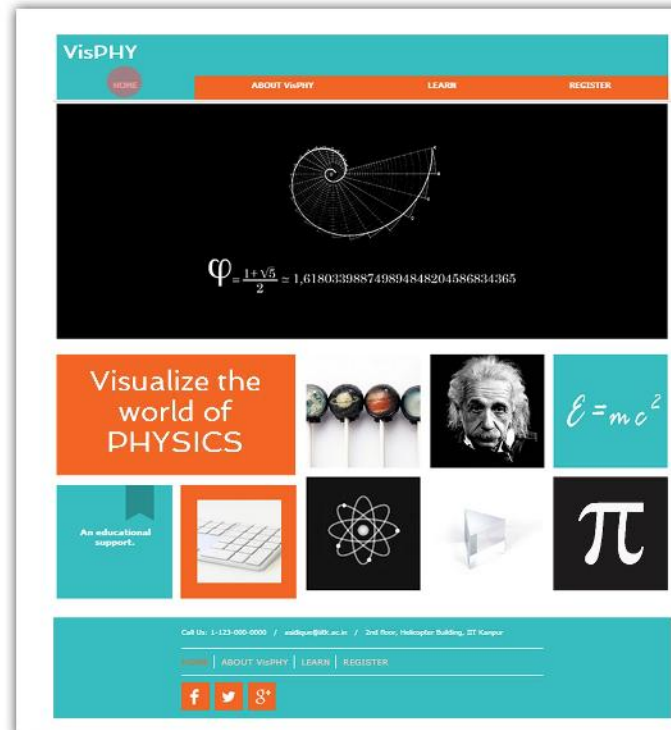
VisPHY

VisPHY

Computer-Based Experience for learning Physics

VisPHY is a computer based application which helps students of age group 12 to 18 to discover the amazing world of physics by visualizing through games, fun virtual experiments, interesting science facts, quizzes etc.

This platform will helps the students to make studies more interesting and also helps to avoid learning without understanding the logic.

VisPHY covers all kind of areas in physics ranging from Gravity, Electricity, Magnets, Mechanics, optics etc.. to Astronomy, Quantum Mechanics, Thermodynamics by starting from the basics and teaching the students step by step through virtual experiments, animations, games, quizzes etc.
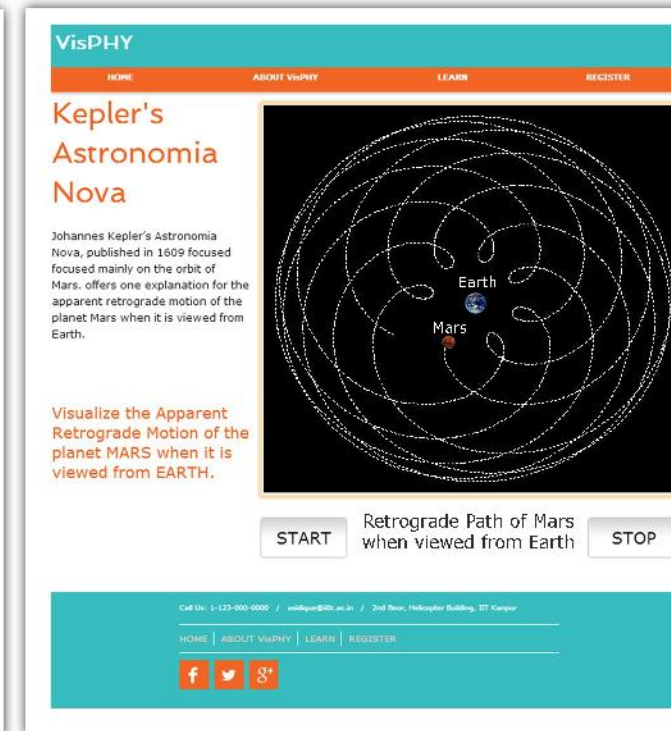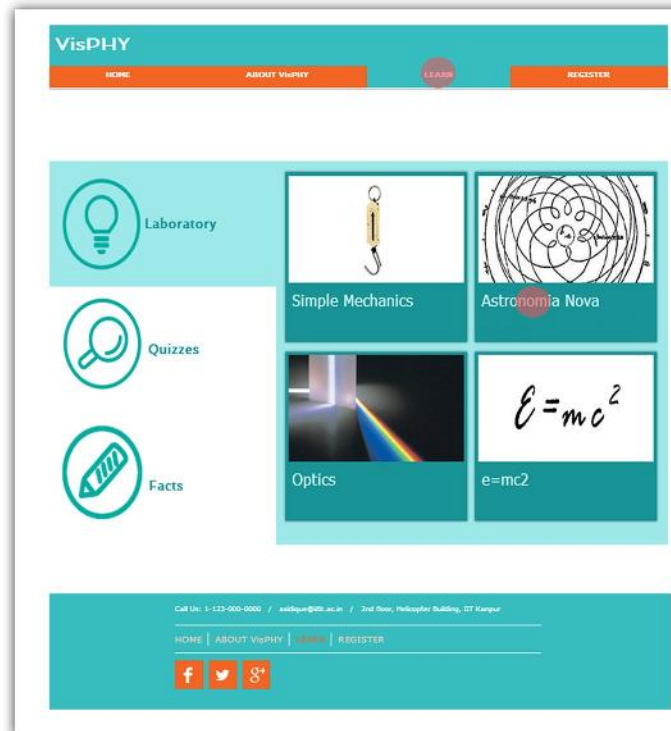
Technical support

For understanding and demonstrating various facts of physics, simulations on few examples were developed.

Example: Kepler's Astronomia Nova

Johannes Kepler's Astronomia Nova, published in 1609 focused mainly on the orbit of Mars, offers one explanation for the apparent retrograde motion of the planet Mars when it is viewed from Earth.

This application helps to Visualize the Apparent Retrograde Motion of the planet MARS when it is viewed from EARTH.

Developed a Simulation on LabVIEW for demonstration and user testing.
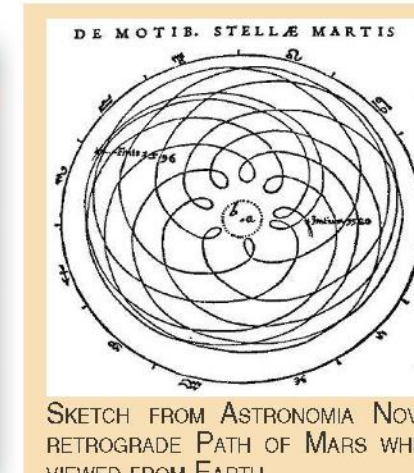
SKETCH FROM ASTRONOMIA NOVA: RETROGRADE PATH OF MARS WHEN VIEWED FROM EARTH
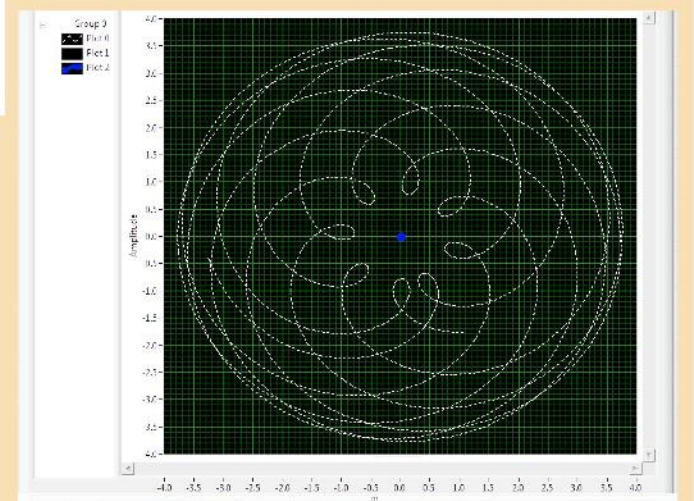
LabVIEW SIMULATION OF THE RETROGRADE PATH OF MARS WHEN VIEWED FROM EARTH

DISCOVER-U

02 DISCOVER-U

Application for Smartphones. The concept of the app was obtained from the thought of helping people taste of interests of different as well as same locality together so that they can share their knowledge and explore more in that particular field of interest. It lets you interact with the experienced people who are there in the apps database and use their level of expertise to improve oneself. Hence, acts as a platform to search people around you having same field of interest. It provides flexibility to the user to select their own way of learning. It uses GPS to track people around you with the same interest and lets you know when they are in your predefined scanner range. For tracking purpose this app uses GPS, Cellular positioning and Wireless Access Points to make your location very precise, giving the user flexibility of letting other people tracks their location. All the data storage is based on Cloud computing.

Discover U
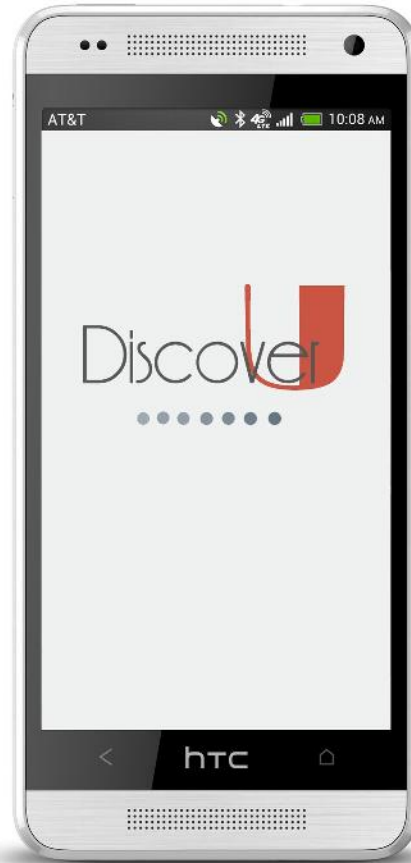
First step towards discoovering the "Inner You"
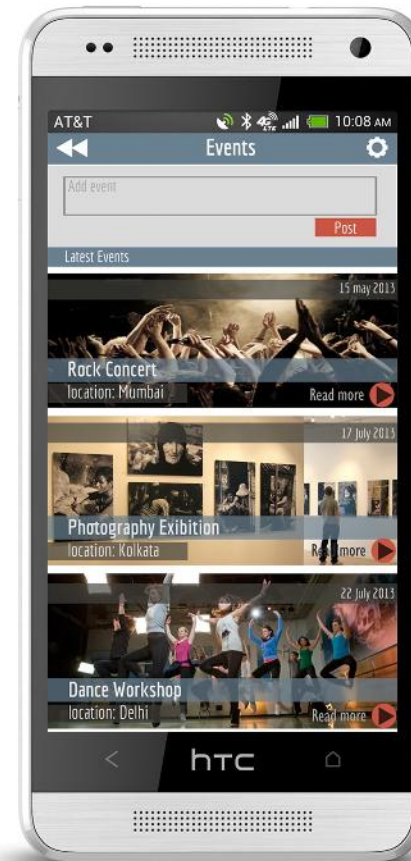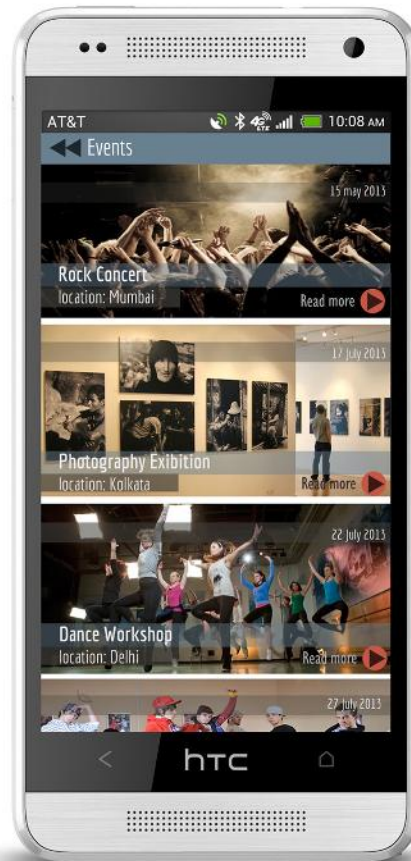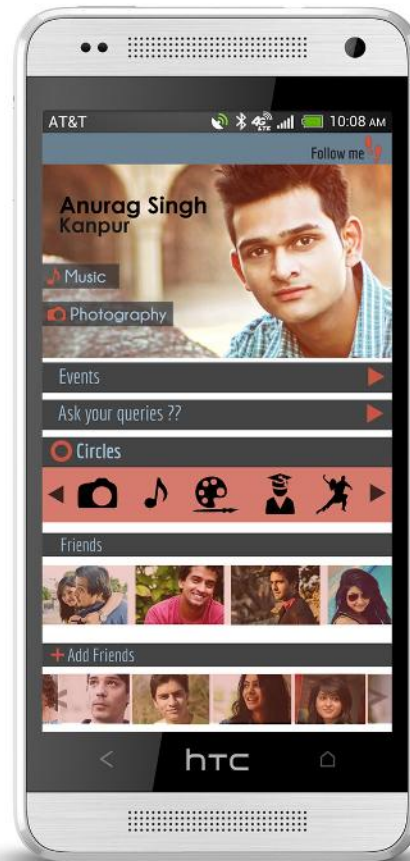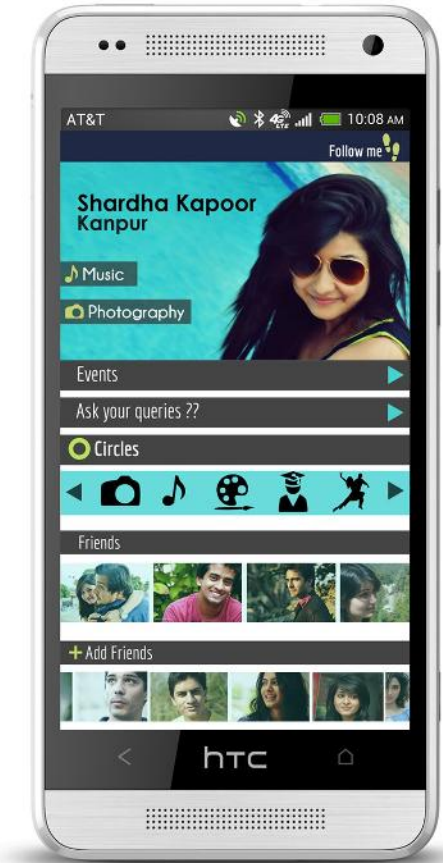
BRANDING AND IDENTITY

ABOOBACKER SIDIQUE'S PORTFOLIO

PRIME 83 Initiative-IIT Kanpur,
Promoting Research, Innovation,
Mentoring and Entrepreneurship
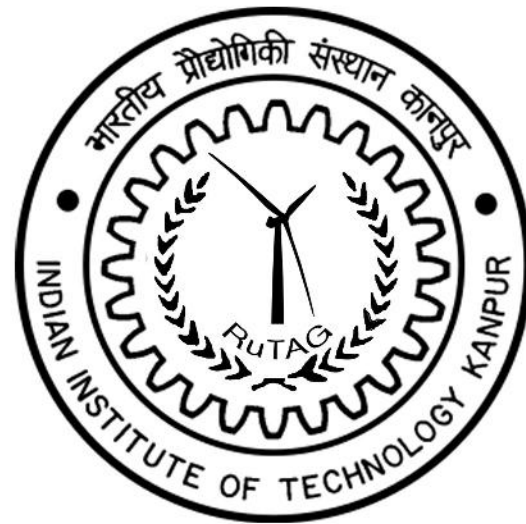
Rural Technology Action
Group IIT Kanpur

National Power Electronics Conference - IIT Kanpur
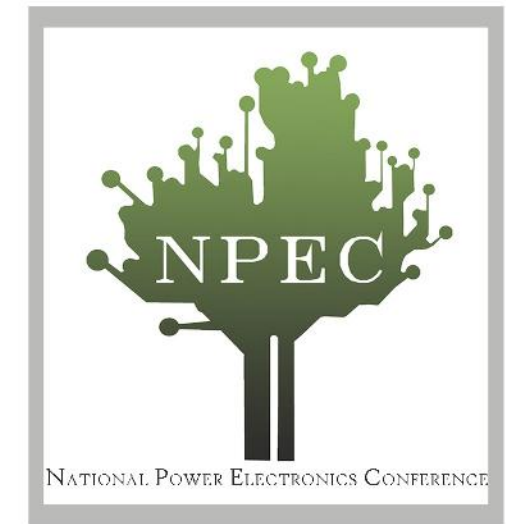
CAD, FEA & CAM

INSTRUCTORS
Dr. Nachiketa Tiwari
Dr. J. Ramkumar

IIT Kanpur

A FOUR WEEK INTENSIVE COURSE

GET TRAINED IN
- Product design through usage of CAD tools
- Product analysis using computer based Finite Element Method
- Product manufacturing using principles of CAM

SPECIAL FEATURES
- A One-of-a-kind course to further your career prospects
- Evening classes on weekdays for your convenience
- Access to a desktop computer for each student
- Successful attendees get Certificate of Completion

Limited number of seats. So, enrol now!

REGISTRATION PROCESS
Fill up the REGISTRATION CARD and send it back to us by post along with the registration fee.

The course fee payable by DD in favour of Director IIT Kanpur: ₹20000

18th Feb to 18th March, 2013

Technical support provider
CADD Concepts

Contact Details:
ph:0512-259-6526
mob:955-927-0306,
9335030767
email: ntiwari@iitk.ac.in,
info@caddconcepts.co.in

Sixth National Power Electronics Conference 2013
December 20-23, 2013
IIT Kanpur

NPEC 2013

Call For Papers

The National Power Electronics Conference 2013 (NPEC 2013) is the sixth biennial conference of the Power Electronics community in India, focusing on the ongoing research in this area and seeking to find potential users of the laboratory-scale developments in industry. Launched in 2003 October at IIT Bombay, it was biennially held at IIT Kharagpur in December 2005, at IISc Bangalore in December 2007, at IIT Roorkee in June 2010 and at BESU, Shibpur in 2011. The sixth NPEC will be held in December 2013.

The objectives of the conference are to provide a forum to promote and accelerate high quality research inviting professional interactions for the advancement and indigenization of Power Electronics in India. Papers with up-to-date research results are encouraged for submission. Specifically, papers having significant experimental results to validate the propositions will be given preference.

Technical papers are solicited on any subject pertaining to the scope of the conference that includes, but is not limited to, the following major topics. The organizing committee also invites proposals for 2-hour tutorials to be presented on Friday December 20. Tutorials that are of value to the practicing engineer, with an emphasis on solutions to practical problems, would be of particular interest. Tutorials are solicited on any subject pertaining to the scope of the conference that includes, but is not limited to, the major topics listed below.

›**Power Converters**
◊Topologies
◊Modeling & Control
◊EMI/EMC Issues
›**Machines & Drives**
◊Design & Optimization of conventional machines
◊Special machines & Drives
◊Advanced control of drives
◊Fault diagnostics
›**Power Electronics applications in Power systems**
◊Power Quality conditioners
◊Design & control of FACTS devices
◊Solid-state breakers
◊HVDC converters & control

›**Distributed Generation interfaces**
◊Solar PV and Wind energy interfaces and control
◊Nano & micro-grids: AC & DC
◊Storage system interfaces for SMES, battery, fuel cell, super/ultra capacitors, inertial storage
›**Semiconductor Power devices & control**
›**Special applications**
◊Lighting
◊UPS
◊Welding/arc furnace

Authors are requested to submit the full paper (6 pages, double column format) for review on or before the submission deadline. Manuscripts submitted for review should not contain authors' names or any affiliation that could divulge their identity. The digests will be reviewed using a double-blind peer review process to ensure confidentiality and fair review. Tutorial proposal should not exceed 1000 words.

The conference will be held in the premises of IIT Kanpur. Kanpur is very well connected by rail. The closest airport is about 30 km from IIT Kanpur though air services are more frequent from Lucknow airport, about 150 min drive from IIT. Temperatures in Kanpur during December are expected to be moderate-low.

Important dates

Tutorial proposals due	June 30
Invitation for Tutorials	July 30
Paper submission for review:	July 31
Intimation of acceptance:	Sep 30
Submission of Tutorial material	Oct 30
Camera-ready paper due:	Oct 31

For any clarification, please contact

Dr. P. Sensarma — sensarma@iitk.ac.in
Dr. S. P. Das — spdas@iitk.ac.in
Dr. S. K. Mishra — santanum@iitk.ac.in

COURSE STRUCTURE

INDIAN INSTITUTE OF TECHNOLOGY KANPUR
presents

AN ELEVEN-DAY INTENSIVE COURSE

CAD, FEA & CAM
JANUARY 2-12, 2013.

INSTRUCTORS
Nachiketa Tiwari
J. Ramkumar

ABOUT THE COURSE

ABOUT THE TEAM

REGISTRATION PROCESS

REGISTRATION CARD

You may pay through a **DEMAND DRAFT** written in favour of **THE DIRECTOR, INDIAN INSTITUTE OF TECHNOLOGY KANPUR.** Please send your complete registration card along with registration fee to:

Dr. Nachiketa Tiwari
Coordinator: 11 Day Course on CAD, FEA, & CAM
Department of Mechanical Engineering
Indian Institute of Technology
Kanpur-208016.
Uttar Pradesh, INDIA

NAME*: _____
NO OF PERSONS: _____
ORGANIZATION: _____

ROLE: _____
ADDRESS: _____

PHONE(MOB): _____ (OFFICE): _____
E-MAIL: _____
*In case of more than one participant please provide their details on a separate sheet of paper.

ART

ART & SKETCHES
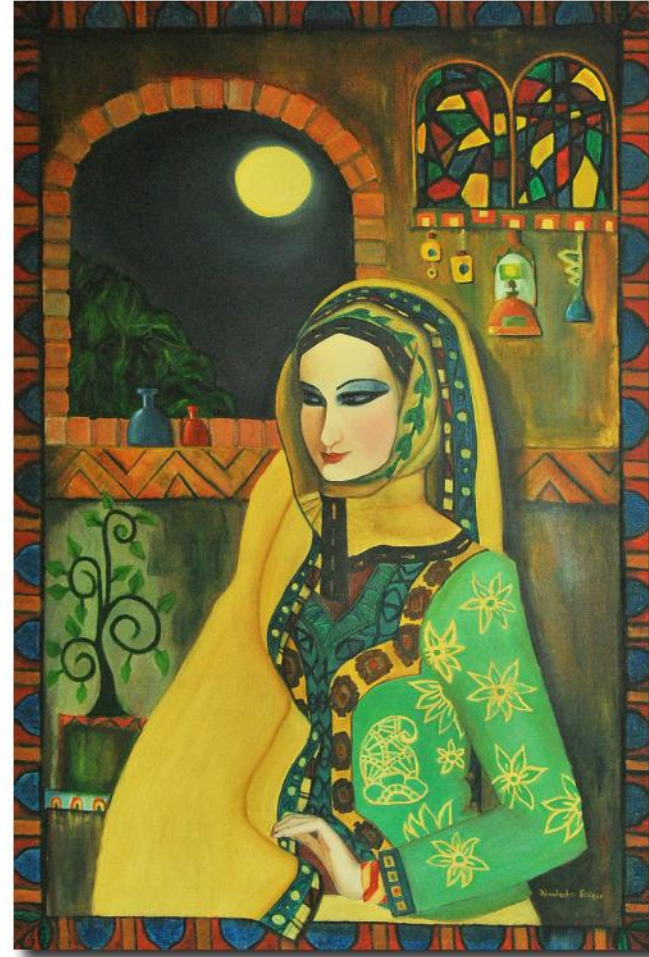
ABOOBACKER SIDIQUE'S PORTFOLIO

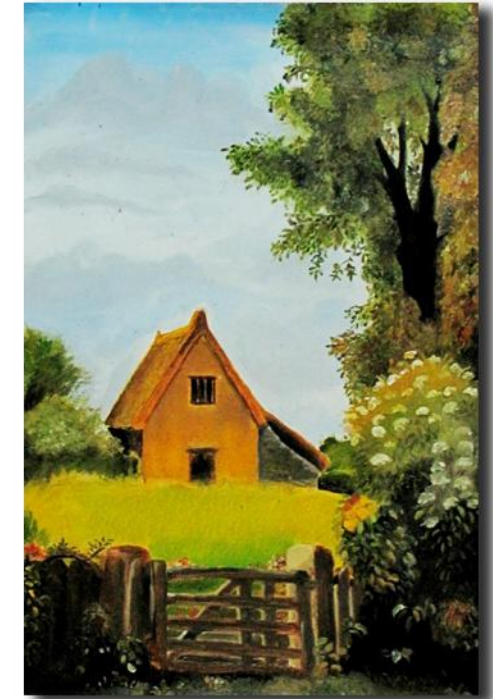# PAINTINGS
Oil on Canvas

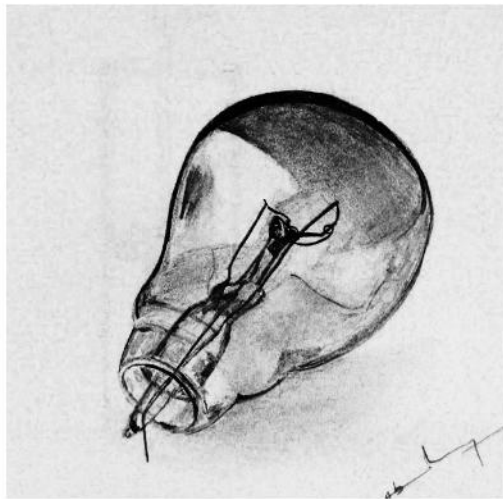Black Buck

Zahrah

Theyyam

An Old Man

Mayooram

The Lady

Angel

The House

SKETCHES
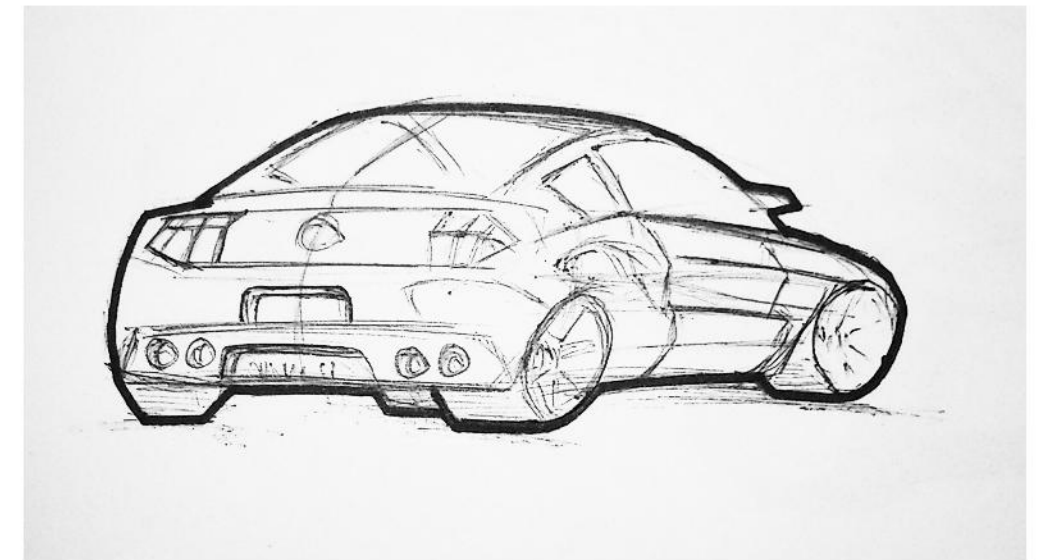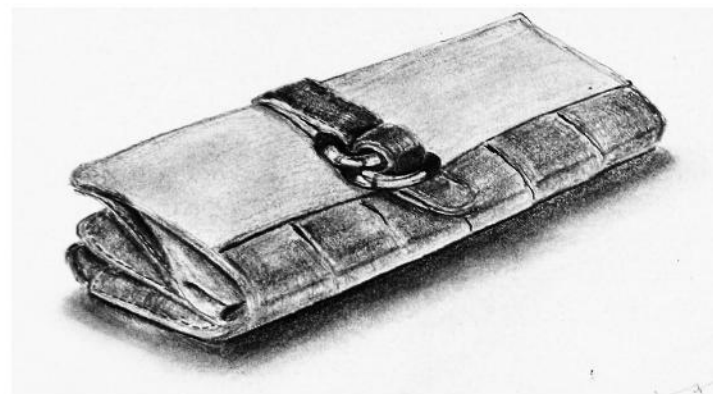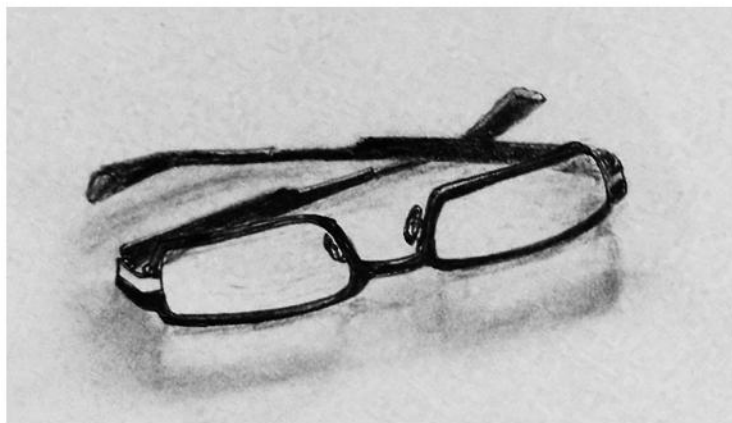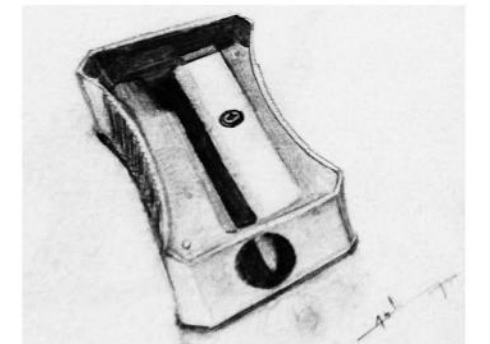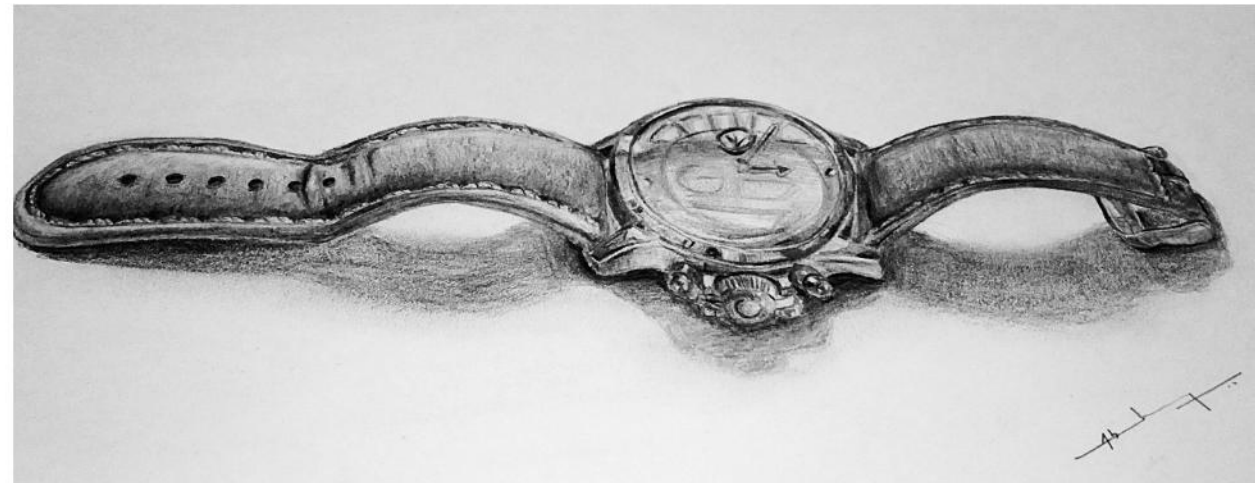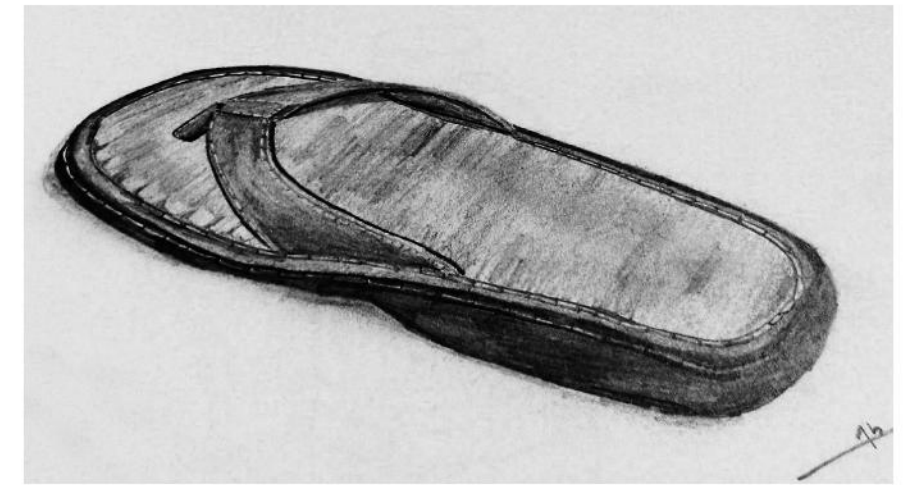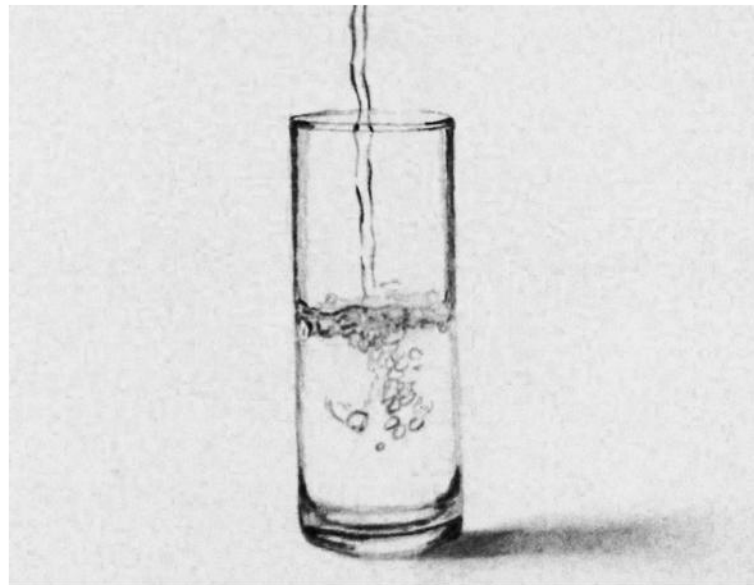
PHOTOGRAPHY
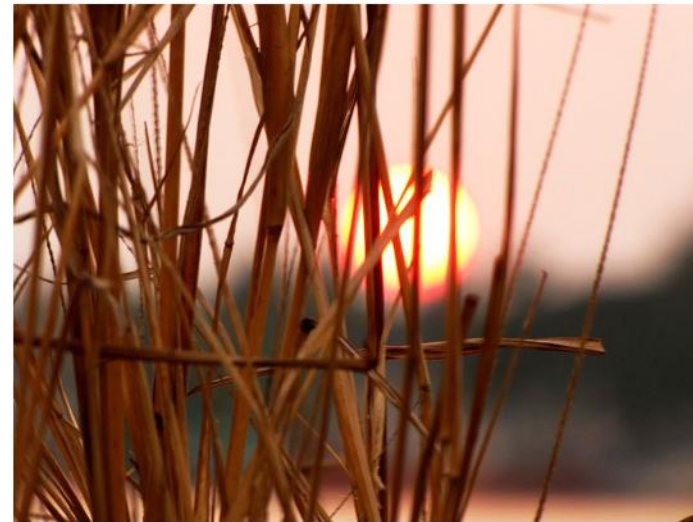
ABOOBACKER SIDIQUE

asidique@iitk.ac.in
abusince1986@gmail.com
https://www.facebook.com/er.a.sidique
Phone: +918960419314