Krutarth Shah

Cornell University
College of Engineering

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Education

Cornell University - **GPA-3.85/4**
Master of Systems Engineering (Specialization in **New Product development & Systems designer**) Expected-Dec 2017
Graduate courses: *Innovative Product Design, Machine Learning, Human Robot Interaction (HRI), Six Sigma for the Design and Operation of Reliable Systems, Model Based Systems Eng., Systems Analysis Behavior and Optimization.*
MBA courses: *Supply Chain Management (6 level), Project Management, Strategic management of Technology & Innovation, Business Analytics Processes and Enterprising System, Consumer Product Design for Entrepreneurship.*

Navrachana University - **GPA-3.96/4, Class Rank: 3/70.**
Bachelor of Mechanical Engineering, Graduated-2016
Elective courses: *Supply chain management, Manufacturing1&2, Operations research & Industrial Eng., Quality mgmt., Robotics, Mechatronics, Systems control.*

Software Skills

Autodesk Fusion 360, Python, C, C++, Arduino, ERP(SAP), JMP, Advanced Excel, Monte Carlo Simulation, Discrete Event Simulation, SYSML, CNC codes.

Professional Experience

➢ **Transcend Robotics** **Silicon Valley, CA**
New Product Development Intern June - August 2017

- **Home Robot:** My project included conceptualization, use case selection, design ideation, product design, project management timeline creation, BOM for prototyping, go to market strategy, customer value proposition and market potential for the company's future product for home robotics market segment.
- **Level Head:** It is a most economical single axis self-balancing platform for the ZED stereo cameras and payloads**.** I entirely owned level Head project from: Idea generation – Designing – Prototyping – Manufacturing - Supply chain - Business strategy - Market valuation, complete product life cycle.
- **Provisional patent:** The invention is a gear mechanism to achieve Independent Bi-directional Variable Speed Multiple Wheel Control with One Motor for Mobile Robots.

➢ **Organics Robotics Lab (ORL)** **Cornell University**
Graduate Researcher August 2016- May 2017

- Pursued a research under Professor Robert Shepherd to develop an **Intelligent Tendon Driven Soft Robotic Hand** which can sense, touch, feel and measure force from different objects like a human hand. Undisclosed project till the time of publication.
- It has applications in Robotics, Exo-skeleton and Prosthetics.
- We used Fusion-360, time of flight sensors, wave guides, optics, silicon rubbers, Arduino, motors, 3-D printers, lithography to develop the robotic hand.

Patents and Entrepreneurial Experience

➢ **Patent - Automatic Weight Changing Exercise Machine with Feedback Control** August 2016- Current

- **Features**: Automatic weight change, incrementing weights in small loads, providing user weight lifting capability, digital interface
- **Product Design tools:** Use Case Behavioral Dia., Customer Affinity Process, Analytical Hierarchy Diagram, QFD (House of Quality), Fusion 360 etc.
- **Electronics & Mfg.:** Elastics, sensors, feedback control loop, motor, drivers, Arduino, pulleys, springs, 3D printing and other manufacturing techniques
- **Business tools:** Business model canvas, Bass model forecasting, Target market, Net value worth, Go to market strategy, Competitor Analysis etc.
- Submitted a Provisional Patent Application

➢ **Research - Autonomous Braking and Emergency Alert System for Two-wheelers** August 2015- May 2016

- **Features**: Autonomously generates a pressure of 20 bars. It is manufactured with only three mechanical components which makes it very compact and light weight.
- **Design, Analysis and Validation**: CREO, ANSYS, Von Mises Analysis, C++, Picasa
- **Manufacturing:** Milling, Drilling, Lathe, CNC machines, Water jet, Grinding, Wire cut EDM, Facing, Blue print finishing.
- **Logic, Algorithm, Simulation & Electronics:** MATLAB-SIMULINK, Arduino, Monte Carlo Simulation, Siemens Simulation Software

Business projects

➢ **AMAZON: Supply Chain for Drone Delivery System** January- May 2016

- Completed a Supply Chain research on Drone Delivery system –AMAZON. The research findings were:
  - **Supply chain strategy & design**: Initial target market, Drone distribution center location, demand and supply uncertainty matrix, Regulation, Technical Specs.
  - **Cost benefit analysis:** No. of deliveries by drone vs Courier, Drone fleet size optimization (Discrete Event Simulation), Profit and Revenue, drone deployment etc.
- Interviewed- *Nick De Angelis, Amazon Senior Manager.*

➢ **Simulation, Modelling, Analysis and Optimization for Air Transportation in USA** February – May 2016

- This project focuses on different aspects of air transportation for 50,000 planes each day. The first part was on building a **discrete-event simulation** *model* to assess the implications of different air traffic control policies. The second part was on carrying out a **reliability analysis** for the aircraft landing process. The third part was on building an **optimization model** for cargo transportation.

Achievements

- "**SIX SIGMA- BLACK BELT CERTIFICATE**" in 2016.
- Received a certificate of excellence for **HIGHEST CGPA FOR 3rd YEAR** (HIGH PERFORMANCE AWARD).