Gowtham Kuntumalla

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Education

- **University of Illinois at Urbana-Champaign** **Champaign, USA**
  Master of Science in Mechanical Engineering *August 2018 – May 2020*
  - **Coursework:** Supply Chain Management and Logistics, Nanoscale Energy Transport, MEMS-NEMS Theory & Fabrication, Mfg. Data and Quality Systems **GPA: 3.9/4.0**
- **Indian Institute of Technology-Bombay** **Mumbai, India**
  Bachelor of Technology. Major in Mechanical Engineering, with Minor in Computer Science *Aug 2014 – July 2018*
  - **Coursework:** Machine Learning, Data Structure and Algo, Non Linear Dynamics & Chaos Theory, Collaborative Eng., Heat Transfer, Cryogenic Engineering, Manufacturing Automation, Mechanical Measurements, Industrial Engineering & Operations Research, Manufacturing Processes & more. **CPI: 9.32/10.00 - Top 5%**

Skills

- **Software:** SolidWorks, ANSYS Mechanical, AutoCAD, MS Office, 3D Printing
- **Programming :** Python, C/C++, MATLAB, HTML, Linux Shell, LaTeX
- **Misc.:** *Project Management*, Team Leadership, Rapid Prototyping, Six Sigma (certified), Basics of Financial Investing

Projects

- **Metal Polymer Hybrid Heat Exchanger System - (Master's Thesis)** **Aug, 2018 – Current**
  Mentors: Prof.Placid Ferreira & Prof.Sanjiv Sinha, UIUC - **Design and Manufacturing**
  - Conceptualised the design stage and spearheading the execution of manufacturing plan of action
  - Performed physical experiments and data analysis using Python on thermo-mechanical test data
  - Negotiated production equipment purchases with vendors
- **Detecting abnormalities in Chest CT scans** **Feb 2019 - Current**
  Personal Project - **Programming**
  - Developing a computer code using CNN (Convolutional Neural Network) on Python to look for abnormalities in the 3D CT (computational tomography) scans. Collected data from a start-up
- **Wearable and Non-Invasive Glucometer** **Jan – May 2018**
  Product Oriented Project, IIT Bombay - **Led a team of 4, Medical Device Innovation**
  - Developed a compact prototype that measures epi-skin glucose painlessly via Diffuse Reflectance Infrared Spectroscopy
  - Delivered Proof of Concept (PoC) with good correlations to commercially available pricking based glucometers
  - Received critical acclaim and accolades from the top doctors of Mumbai in a medical device expo
- **Computational Analysis of Potential Rocket Propellants** **Jan – Nov 2017**
  Chemical Reactions Simulation, Guide: Prof.Neeraj Kumbhakarna, IIT Bombay - **Computer Simulations**
  - Modelled High Nitrogen content Bis-Homo Cubane (BHC) compounds using *ab initio* level quantum mechanics based methods in computational chemistry
  - Computed various parameters such as heat of formation, specific impulse, density determining the utility of potential propellants using *Gaussian 09* and *NASA Chemical Equilibrium with Applications(CEA)*
  - Modelled combustion reactions predicting their kinetics and thermochemical properties
- **Particle Image Velocimetry (PIV)** **April – June 2016**
  Programming Project, Guide: Prof.Amit Agrawal, IIT Bombay - **Scientific Computing**
  - Implemented a computer code on C++ to perform the 2D digital evaluation of flow velocity using FFT routine of Cross Correlation technique

Professional Experience

- **Washington University in St.Louis** **St.Louis, USA**
  Summer Research Intern, Department of Energy and Chemical Engineering - **Scientific Computing** *May – July 2017*
  - Undertook comprehensive literature review on fractals, aggregation processes and wrote a protocol for conducting computer simulations on high performance computing (HPC) cluster. *Languages used: C++ , Bash*
  - Analysed effects of change in defining parameters like volume fraction on kinetics of the sol to gel transition

- **Techno-Managerial Role** **Mumbai, India**
  Technical Councillor, Student Council of Hostel 4, IITB - **Led a team of 4** *April 2016 – Mar 2017*
  - Awarded Color and Special mention for significant contribution to the development of hostel culture
  - Played an Instrumental lead role in achieving the coveted **1st**/16 position in Intra-college annual general championship
  - Instrumental in renovation of hostels 'Tech-Room' and supplying it with requisite equipment
  - Conducted workshops, group discussions on working of common electronics such as calculator, keyboard, Gameboy. Undertook initiatives such as 'Tech-Quiz' to encourage critical thinking

Course Projects

- **Stability Monitoring of Products in Milling at Caterpillar, Machine learning project** **Nov – Dec 2018**
  ME 498- Manufacturing data & Quality systems - Guide: Prof. Chenhui Shao, UIUC
  - Performed statistical data processing on a data set consisting of excavator stick made by Caterpillar
  - Conclusions and recommendations were made based on results from control charts & Decision Tree algorithm

- **Assembly Line Automation** **Mar – April 2018**
  ME 637- Manufacturing Automation, IIT Bombay, **Consultant for local manufacturing industry**
  - Visited manufacturing facilities of plastic injection molding and corrugated cardboard packaging industries in Mumbai
  - Introduced an innovative solution to automate the process of part retrieval & orientation, excess removal (deflashing) & stacking in an injection molding process of plastic flange end caps
  - Designed models for Vibratory Bowl Feeder, Feed Tracks and Pick & Place mechanisms
  - Financial analysis predicted a payback period of less than 7 months for the proposed solution

- **Product Service System Model & Six Sigma Management** **Jan – Mar 2017**
  ME 308- Industrial Engineering and Operations Research, IIT Bombay - **Business Planning**
  - Formulated an elaborate plan for establishing a company on waste management and treatment
  - Ideated a detailed business plan for establishing and running a company on manufacturing solar panels based on six sigma principles (6σ)

Leadership & Activities

- Teaching Assistant for the courses "Heat Transfer Lab ", "Statics", "Engineering Mechanics" and "Differential Equations"
- Responsible for mentoring, conducting tutorials, labs, office hours & grading papers for 60 students, Feb 2017 – May 2019

Honors and Awards

- Awarded Kishore Vigyan Protsahan Yojana(KVPY) scholarship by Department of Science and Technology, India 2014
- Ranked among top 10 in the Mechanical Engineering undergraduate class of 2018
- Secured 1^{st} position for design and construction of a Rube Goldberg machine with 15 successive contraptions in the Padarth, Annual MEMS department festival 2016 (IIT Bombay)

Scholastic Achievements

- Earned a perfect 10 GPA. Achieved by 10 out of 1000 in a semester - Spring 2018
- All India Rank 320, IIT-JEE among *150,000* overall participants for entrance to the IITs. Arguably the toughest Engineering entrance exam in India.
- Secured 99.97 percentile in JEE-Mains among more than *1.3 million* candidates
- Awarded **Amateur Mathematician** title and certificate of merit by **IAAMS (Integral Association of Amateur Mathematicians and Scientists)**