



Chandan Kumar Sinha  
MS, Mechanical Engineering  
Virginia Tech, Blacksburg, VA  
[chandansinha@vt.edu](mailto:chandansinha@vt.edu)

Indian Citizen  
DOB: 03.15.1996  
+1 (540) 998 1527  
[chandansinha.me](http://chandansinha.me)

| Degree        | Institute                     | University/Board | Year        | CPI      |
|---------------|-------------------------------|------------------|-------------|----------|
| Master's      | Virginia Tech                 | Virginia Tech    | 2023 (Exp.) | 3.92/4.0 |
| Graduate      | IIT Hyderabad                 | IIT Hyderabad    | 2017        | 7.98/10  |
| Intermediate  | DAV Public School, Koylanagar | CBSE             | 2013        | 96.2%    |
| Matriculation | DAV Model School, CFRI        | CBSE             | 2011        | 10/10    |

## Areas of Interest

Robotic Systems Engineering, Space Exploration, Product Design, Programming, Film-Making, Teaching/Mentoring

## Research Experience

- **Graduate Researcher | SpaceDrones Lab, Virginia Tech** [Feb'22 - Present]  
(Advisor - Dr. Jonathan Black, Dept. of Aerospace and Ocean Engineering)  
Developing autonomous robotic platforms for In-Space Assembly and Servicing. Primarily interested in the Guidance, Navigation, and Control (GNC) aspect of the platform since it needs to have a robust and optimal control system due to varying payload mass along with collision-free path planning with minimal fuel expenditure. Working on hardware development and software simulation along with HITL testing.
- **Graduate Researcher | Advanced Control Systems Lab, Virginia Tech** [Aug'21 - Dec'21]  
(Advisor - Dr. Andrea L'Afflitto, Dept. of Industrial and Systems Engineering)  
My research primarily dealt with designing robust and adaptive control algorithms for the autonomous flight of UAVs. Specifically, I worked on the Output Feedback Linearization of the flight controller. Did several flight tests within the drone cage with Vicon MoCap cameras and QGroundControl software.
- **Research Assistant | Turbulent Combustion Lab, IISc Bangalore** [May'19 - Dec'20]  
(Guide - Dr. Swetaprovo Chaudhury, Dept. of Aerospace Engineering )
  - Understanding the flow-combustion dynamics leading to flame blowoff and re-ignition events inside a model gas turbine combustor housing three interacting swirl premixed flames.
  - Handled computational analysis of experimental data obtained from simultaneous sPIV-PLIF, OH\* chemiluminescence and pressure measurements to extract critical parameters for different swirler configurations.

## Work & Internship Experience

- **Model-Based Systems Engineering Intern | Cummins Inc.** [May'22 - Present]  
(Columbus, Indiana, USA)
  - Worked under Corporate Research & Technology division to bring agility in hardware development through robust and consistent descriptive system modeling with enough fidelity to answer stakeholder's questions. Acted as the central node for Engine and New Power Business Units.
  - Learned the fundamentals of MBSE and SysML. Built system models and cleaned up existing ones in PTC Windchill Modeler. Also worked on the integration of modeFRONTIER for multi-disciplinary optimization and Tom Sawyer Perspectives for navigating complex diagrams intuitively. [[Blog Post](#)]
- **Triplou | Co-Founder & Product Architect** [Sep'18 - Jun'21]  
(Kolkata, India)
  - [Triplou](#) is a 360-degree travel experience platform addressing the problem of the fragmented travel industry. With handpicked experiential stays, adventures and activities, it aims to promote sustainable tourism by a pool of all local vendors. Recognized by the Ministry of Tourism, Govt. of India.
  - Led the web development and creatives division while making critical business decisions. Achieved revenue growth of over 400% YoY (pre-Covid). [[Pitch Deck 2019](#)]
- **Bharat Petroleum Corp. Ltd. | Executive Manager, Retail Operations** [Jun'17 - Aug'18]  
(Maharatna PSU | Siliguri, Balasore - India)
  - Worked on TAS (Terminal Automation System), safety systems, equipment testing & preventive maintenance related to the storage and handling of Class A inflammable products.

- Managerial responsibilities included product dispatch planning, gantry & wagon operations, audit compliance inline with OISD & MBLR guidelines. Served at only BPCL location that supplies to foreign location. Handled excise operations related to the distribution of bonded products. [\[Blog Post\]](#)
- **Center for Healthcare Entrepreneurship (CfHE) | Intern | Technical Assistant** [May'16 - Apr'17]  
(Mentor - Prof. Mohan Raghavan, IIT Hyderabad)
  - One of 4 interns selected for setting up the lab from the ground up. Underwent training at IndioLabs, Bangalore to understand the nuances of building med-tech products.
  - Learned 'Human-Centered Design' approach following the Stanford-India Biodesign process. Spent my final year working as a technical assistant to the fellows. Part of [NeMo.Care](#) founding team which aims to develop a neonatal wearable device for constantly monitoring vital parameters to detect distressing conditions like apnea, hypothermia, etc.
- **DreamsInfinity | Product Development Intern** [Jun'15 - Jul'15]  
(Mentor - Mr. Anubhav Bansal, New Delhi, India)
  - Designed & developed a commercial 3D printer that uses UV-DLP (Direct Light Processing) technique.
  - Minimized prototyping cost by indigenous manufacturing and in-house resin preparation. Offered in top-down & bottom-up configurations. Also wrote the code base for printing logic in conjunction with customized open-source 3D slicing software *Creation Workshop*. [\[Blog Post\]](#)

## Key Academic Projects

- **Applied Linear Control** [Spring 2022]  
Course Project, Dr. Steve Southward
  - Performed system ID in frequency domain and designed discrete-time output feedback controller with Kalman filtering for a black-boxed LTI system [\[Report\]](#)
- **Optimization Techniques in Engineering** [Spring 2022]  
Course Project, Dr. Pinar Acar
  - Gear-pair optimization using Sequential Quadratic Programming [\[Report\]](#)
- **Dynamic Modeling of 3-axis Gimbal for Smartphones** [Aug'16-Apr'17]  
Honors Project, Prof. R. Prashanth Kumar, IITH)
  - Worked on a 3-axis gimbal for better hand-held cinematography with smartphones. For v1.0, built a low-cost prototype of anti-shaking, multi-DOF slider in the 6<sup>th</sup> semester. Shot a lot of my early [YouTube videos](#) with that equipment. [\[Presentation\]](#)
- **Application of Artificial Grass for Noise Reduction in Hospitals** [Spring 2017]  
(Engineering Noise Control, Prof. B. Venkatesham, IITH)
  - Tried to measure the concerned noise level and the effects of room acoustic parameters such as noise spectrum and reverberation time (RT) on patient's sleep quality. Then proposed a method for noise control through artificial grass and measured the reduction in noise level for comparison. [\[Report\]](#)
- **Probing The Survival of Aquatic Ectotherms in Extreme Seasons** [Autumn 2015]  
(Heat & Mass Transfer, Prof. Nishanth Dongari, IITH)
  - Worked on analytical & CFD analysis of ice formation in lakes during winter and thermal stratification during summer. Modeled lake in ICEM-CFD and studied the effects of meshing parameters on the final solution using ANSYS-FLUENT. [\[Report\]](#)
- **Mechanically Automated Periodic Garden Watering System** [Autumn 2014]  
(Kinematics & Dynamics of Machinery, Prof. B. Venkatesham, IITH)
  - Built a mechanical device addressing the problem of periodically watering plants in absence of the caretaker. The mechanism used 3D printed worm gear assembly for considerable speed reduction from the driver to the end-effector and used salt dispensing technique for water ejection at required times. [\[Report\]](#)
- **Vibrational Frequency Detector Using Light** [Autumn 2013]  
(Independent Project, IITH)
  - Built a device for measuring the vibrational frequency of faulty mechanical systems using light. It uses photo-resistors, A/D converter along with a data acquisition software DI-145. A compact version of it was installed in Baja SAE All-terrain Vehicle for analyzing its structural integrity. [\[Presentation\]](#)

## Non-Academic Projects

- **IIT Hyderabad Student Satellite Project** [Aug'14 - Apr'15]  
(Head - Shanti Swaroop Kandala, Ph.D Scholar, MAE, IITH)
  - Core member of Attitude Determination & Control System (**ADCS**) team. Worked on the feasibility study of magnetic torquers, reaction wheels, and RCS thrusters for 3U CubeSat's GNC along with Kalman filter design. Did extensive literature study on payload selection and headed the web team as well.
- **Medbuzz - A Personalized Healthcare System for Geriatrics** [Autumn 2016]  
(Startup Weekend Hyderabad, India)
  - One of the spin-off projects from my stint in Center for Healthcare Entrepreneurship (CfHE) where we built a smart wearable device for the elderly to remotely monitoring of their vital health parameters and notifies caretaker in case of abnormalities and falls detection. [Blog Post]
- **IBM Drone Hackathon** [Spring 2016]  
(Nvision 2015, Techno-Management Fest, IITH)
  - Built **Thready** - a threat detection system using drones which measures the concentration of harmful gases in the vicinity and displays the data through a web interface for safe rescue operation. Based on [Particle](#) IoT platform. One of the top 3 teams selected for live demo during the fest. [Blog Post]
- **IBM IoT Hackathon - Bluemix Platform** [Spring 2015]  
(ELAN 2015, Cultural cum Technical Fest, IITH)
  - Built a real-time bus tracking system using Arduino based transceiver, Node-RED hardware routing and IBM Bluemix cloud platform for app deployment. Also made the client-side web interface for the same.
- **Revamping IITH Library Website with Drupal CMS** [Spring 2015]  
(Head - C. Mallikarjuna, Librarian, IITH)
  - Took this responsibility out of my sheer interest to work with content management systems. Built a full-fledged library website with new features and a better browsing experience.

## Technical Proficiency

|                              |   |   |
|------------------------------|---|---|
| <b>Operating Systems</b>     | : | Windows, Linux (Debian Platform)  |
| <b>Programming Languages</b> | : | C, C++, Python, Java  |
| <b>Web Development</b>       | : | HTML5, CSS3, Vanilla JavaScript, ReactJS, NodeJS  |
| <b>Databases</b>             | : | PostgreSQL, phpMyAdmin, MongoDB   |
| <b>Modeling/Simulation</b>   | : | SolidWorks, Fusion 360, MATLAB, ANSYS   |
| <b>Software/Tools</b>        | : | Arduino, L <sup>A</sup> T <sub>E</sub> X 2 <sub>ε</sub> , Git, Adobe Creative Cloud Suite |

## Positions of Responsibility

- **Teaching Assistant** - ID1054 Digital Fabrication course, Prof. S. Surya, MAE, IITH [Aug'15 - Nov'15]
- **Web Coordinator** - Nvision 2016, Techno-Management Fest, IIT Hyderabad [Jun'15 - Jan'16]
- **Graphic Designer** - EML (Extra Mural Lectures) & Elektronika (Electronics Club, IITH) [Aug'15 - Apr'16]
- **Web & Content Manager** - TEDxIITH 2015 and Sunshine (Counselling Cell, IITH) [Jan'15 - Apr'15]
- **Event Organizer** - Business Quiz, Robowars and EML. Handled multimedia during fest. [2014/15/16]

## Extra-Curriculars

- **Film-Making** - I write, shoot and edit all my videos under the banner [OrangeDurito Productions](#).
- **Reading & Writing** - Have written 100+ posts on WordPress under the pseudonym [TheVindicatedAxiom](#) with 10,000+ readership. I also write book reviews on [Goodreads](#).
- **Teaching & Mentorship** - Mentored IIT-JEE aspirants, undertook community teaching under NSS program, conducted safety lectures and supervised apprentice training while working in BPCL. Also mentored students in technical events like MLH Local Hack Day, Robotics workshop, etc. as the web coordinator.
- **Volunteering** - Worked with the Appalachian Trail Conservancy team for trail and shelter maintenance. Part of the college NSS (National Service Scheme) team for all 4 years, carrying out community service in the locality around the campus. Volunteered for **TechCon** - a technology conclave organized by Dept. of Mechanical & Aerospace Engg. to bridge the gap between academia and industries.

- **Campus Clubs** - Core member of E-Cell, Robotics Club, Elektronika and Torque (automobile club).
- **Quizzing** - Avid quizzzer since childhood. Among the final 6 in Brainstorm & Brainstorm 2.0 organized by IIT(ISM) Dhanbad among 1000+ teams. Continued quizzing in college and afterward.
- **Dance & Music** - Member of Dance Club in the first semester of college. Vocalist in my 3 member college band *Transition Redefined*.

### Notable Achievements

- Appointed as **Control Room Officer** in the very first year of employment at BPCL. [2018]
- Awarded **Institute Free Studentship Scholarship** for 3 consecutive years in college. [2014-2017]
- One of 15 students selected for **i.school Workshop** on 'Experience Design in India' by University of Tokyo in collaboration with IIT Hyderabad. [2016]
- **Best Director** award for my first short-film '[Refaire](#)' at IITH Film Festival. [2016]
- Finalist at **Startup Weekend Hyderabad**. Felicitated by Dr. Reddy's Lab for creating [Medbuzz](#). [2016]
- Won **Business Simulation Game** among 50+ teams at IITH. Awarded sponsored entry to Global Entrepreneurship Summit, IIT Bombay. Finalist of 'Mergers and Acquisitions' event. [2015]
- **All India Rank 2899** in JEE-Advanced among 0.15 million candidates. **All India Rank 919** in JEE-Mains among 1.4 million candidates. [2013]
- **School gold medalist** in 15<sup>th</sup> National Science Olympiad and 5<sup>th</sup> & 6<sup>th</sup> International Mathematics Olympiad conducted by Science Olympiad Foundation, New Delhi with national ranks within 100. [2012]
- Awarded **INSPIRE Scholarship** by Dept. of Science & Technology, Govt. of India. [2011]

### Key Courses Undertaken

- |                                      |   |
|--------------------------------------|---|
| • Kinematics & Dynamics of Machinery | • Computer Integrated Manufacturing         |
| • Design of Machine Elements         | • Modern Robotics Specialization (Coursera) |
| • Instrumentation and Control        | • Introduction to Data Structures           |
| • Modelling and Simulation           | • Database Systems + Lab                    |
| • Dynamics & Control (MITOCW)        | • Introduction to Film, Music & Technology  |