CHANDAN SINHA

chandan.sinha@cummins.com | chandansinha.me | +1 (540) 998 1527 | 200 Jackson St, Columbus, IN

EDUCATION

Virginia Tech
MS, Mechanical Engineering
August 2021 - May 2023
Robotics, Autonomous, and Dynamical Systems (RADS) Thrust Area
GPA: 3.91/4.0

IIT Hyderabad, India
B.Tech, Mechanical Engineering
August 2013 - May 2017
Product Design & Mechatronics (Honors)
CGPA: 7.98/10

LINKS

Github:// **MechanicalCoder**
LinkedIn:// **in/chandansinha1**
Goodreads:// **orangedurito**
StackExchange: // **OrangeDurito**
YouTube:// **OrangeDurito**

MASTER'S COURSEWORK

Model Predictive Control for Agile Robots
Nonlinear Systems Theory
Estimation and Filtering
Applied Linear Systems and Control
Industrial Robotics
Optimization Techniques in Engg.
Digital Signal Processing

TECHNICAL SKILLS

Experimental
Instrumentation (accelerometer, strain gage, thermocouple), Data Acquisition, DSP

Programming
C • C++ • Java • Python • Bash • Git • HTML5 • CSS3 • JavaScript • Docker • LaTeX • Arduino • SharePoint

Modeling/Simulation
SysML • SolidWorks • Fusion 360 • Ansys • MATLAB • Simulink • ROS • Gazebo • Blender • OpenRocket

Creativity - Adobe Photoshop, Illustrator, Premiere Pro, After Effects [CC Suite]

EXTRA-CURRICULAR

Web Developer - Techno-management fest, IITH | TEDxIITH | Counseling Cell, IITH

Graphic Designer - Dept. of Geosciences, Virginia Tech | Extra Mural Lectures, IITH

Video Editor - Humour Me Pvt. Ltd. | OrangeDurito Productions

Volunteer - Appalachian Trail Conservancy | National Service Scheme (India)

Electronics Lead - @DiggeridoosVT

WORK EXPERIENCE

Mechanical Systems Engineer - Experimental | Cummins Inc.
June 2023 – Present | Columbus, Indiana

- Currently working at Experimental Mechanics Lab conducting experimental tests related to bolt gauging, durability and fatigue testing, strain gauge and thermocouple instrumentation, test-cell data acquisition and analysis to support product design decisions from an Applied Mechanics perspective.

Model-Based Systems Engineering (MBSE) Intern | Cummins Inc.
May 2022 – August 2022 | Columbus, Indiana

- Worked under Corporate R&T Systems Engineering team to accelerate agile product development. Learned the fundamentals of systems thinking, MBSE, and SysML. Built descriptive system models for new product architectures in PTC Windchill Modeler.
- Deployed OSLC code for tool integration to automate multi-disciplinary optimization workflow and graph visualization for complex diagrams.

Graduate Research Assistant | SpaceDrones Lab, Virginia Tech
August 2021 – May 2023 | Blacksburg, Virginia

- Worked on Data-Driven Predictive Control of the SpaceDrones testbed as a pathway for future autonomous On-Orbit Servicing, Assembly, and Manufacturing (OSAM) missions. Using a hexacopter platform with manipulator arm attached underneath, I explored the implementation of online and offline system identification techniques along with model-predictive control to optimally accomplish few common EVA (Extra-Vehicular Activity) tasks performed by the astronauts. [Blog Post]

Research Assistant | Turbulent Combustion Lab, IISc. Bangalore
May 2019 – December 2020 | Bangalore, India

- Computationally analyzed the blow-off dynamics in interacting swirl premixed flames using sPIV-PLIF imaging and pressure measurements. Did post-processing in MATLAB and analytically proved the accuracy of our algorithm. Manually cleaned 4000+ images to improve the reliability of parameter calculations. [Blog Post]

Executive Manager, Plant Operations | Bharat Petroleum Corp. Ltd.
June 2017 - August 2018 | Balasore, India

- Handled 'Terminal Automation System', HSSE, gantry operations, and preventive maintenance related to storage and distribution of Class A inflammable products.
- Saved over 5 million (in Rs.) in operating costs as Control Room Officer through prompt troubleshooting, achieving >98% NANO (No Automation, No Output) rating.

Technical Assistant | Center for Healthcare Entrepreneurship
May 2016 – April 2017 | IIT Hyderabad, India

- Worked in a team of 4 to establish a fully-functional incubation space for startups.
- Understood the nuances of building med-tech products and complying with regulatory standards (e.g. ISO 13485). Learned 'Human Centered Design' approach following the Stanford-India BioDesign process. Part of nemo.care founding team.

Master's Course Projects

- Designed an MPC control law to asymptotically stabilize hexacopter dynamics for time-varying trajectory tracking. [Spring'23]
- Performed system ID in the frequency domain and designed a discrete-time output feedback control system with Kalman filter for a black-boxed LTI plant. [Spring'22]
- Gear-pair optimization using Sequential Quadratic Programming. [Spring'22]
- Devised a continuous-time full-state feedback controller for attitude control of a satellite with flexible solar panels using state-space LTI system model. [Fall'21]
- Analyzed forward & inverse kinematics, formulated equations of motion, and examined backstepping & adaptive controllers for 6-axis collaborative robot. [Fall'21]

Bachelor's Honors Project

- Modeling and control of a 3-axis camera gimbal for smartphone cinematography.