Chandan Varma Tamada

https://www.linkedin.com/in/chandanvarma07/

Email : chandan.tamada@colorado.edu

Mobile : +1 602 813 8567

Research Interests

Hypersonic Aerodynamics, Flight Mechanics

Education

University of Colorado, Boulder — Boulder, US

Master of Science in Aerospace Engineering — Jan 2025

- **Relevant Coursework:** Fundamentals of Gas Dynamics, Hypersonic Vehicle Design Project

Andhra University College of Engineering — Vizag, India

Bachelor of Technology in Mechanical Engineering — Jul 2021

Experience

Vayukah Drone Systems and Services Private Limited — Oct 2021 – Nov 2022

Aerodynamicist and Flight Mechanics Engineer — *Vijayawada, India*

- Initiated integration of Arducopter, an open source flight controller stack written in C++, with Microsoft AirSim (Unreal game engine based simulation platform) to serve as in house Software-in-the-loop (SITL) testing.
- Created a SITL (Software in the Loop) simulation and integrated a 6 DoF Flight Mechanics model in order to evaluate the performance of autopilot and autotune the PIDs.
- Using an off-the-shelf environment in Unreal Engine 4, plant health analysis was tested in a simulation environment using AirSim using a developed SITL simulation for mapping applications.
- Performed CFD analysis for drag reduction and simulated propeller wash, wake region analysis, etc. Also performed structural, modal, crash and thermal analysis.
- Development of an Obstacle Avoidance Algorithm utilizing a stereo camera integrated with Ardupilot and simulation using SITL and AirSim environments.

Simulation Lab — Dec 2020 – Feb 2021

CAE Engineer — *Online*

- Curated wing flap features for improved aerodynamics, increasing load capacity of subsonic planes and drones and reducing thrust requirements.
- Modeled and analyzed a wing feature in ANSYS Fluent to increase lift and reduce drag.

Saif Automations Services LLP — Jun 2020 – Aug 2020

Mechanical Design Intern — *Vizag, India*

- Developed Thruster Assisted Self Righting for the water drone after calculating, testing, and maintaining buoyancy with buoyant blocks. In addition, designed and developed the experimental setup for Water Jet-52 and tested for its power and thrust requirements.
- Designed, developed and tested Waste Collecting Attachment for the Water drone to clean docks at Naval Dockyard and Torpedo Recovery Attachment to recover torpedoes fired in sea after testing.

Academic Projects

Mathematical Formulation and Optimization of Structural Design of an Aircraft Wing | *B.Tech Thesis*

Guided by Dr.V.Vijaya Babu, Professor, Dept. of Mechanical Engineering, AUCE(A)

- Studied and analyzed the structural elements of a wing and optimized these elements for maximum weight by using Cessna 172 wing design data; lifting and dragging parameters are simulated in XFLR5 and then mathematically formulated in MATLAB to determine weight and stress.
- A skin thickness, spar position and topology optimization (for ribs) were performed to obtain minimal weight without compromising strength and validated using Fluid Structure Interaction (FSI) Analysis.

Effects of Topology Optimization and Generative Design of an Aerospace Structure | *Research Intern*

Guided by G Sreedhar Babu, Scientist 'F', Research Centre Imarat (RCI), DRDO, India

- Researched, studied, and implemented a variety of computational design optimization techniques in Autodesk Fusion 360 and Netfabb.

- By using Topology Optimization and Generative Design, a new aircraft wing was developed and 3d printed with improved performance and reduced weight.

CFD Simulation of Shock Tube with analytical comparison | *GitHub*

- Utilized ANSYS Fluent to perform CFD analysis of shock tubes.
- Developed a Python code to simulate the shock produced in a shock tube theoretically and to compare the CFD results with Pressure, Velocity, Density and Temperature plots.

Supersonic Flow over a double wedge Airfoil

- A numerical study using ANSYS Fluent was conducted to investigate supersonic flow over a double wedge airfoil.
- The effect of increasing the angle of attack on Mach number, Pressure and Temperature was examined. A Mesh independence study was conducted and the least computationally expensive yet accurate mesh size was determined.

Achievements

- Awarded with Gold Medal and Merit Certificate in B.Tech Mechanical Engineering by Andhra University- **Andhra University Salutatorian Award** Jul 2021
- Awarded with Citizen Scientist Award by NASA for contributions to observations of near-Earth objects and Main Belt asteroids by participating in the analysis of images taken by Pan-STARRS telescope. Oct 2020
- Chegg Excellence Award offered by Chegg in recognition of outstanding contributions with the student community to the Chegg Q&A board. Aug 2019
- Winner of the Judges' Choice Award and prize grant by Local Motors (LM Industries), USA, for the Drone Swarm Challenge. Jun 2020

Publications & Conferences

- **Computational Investigation on Aerodynamic Characteristics of Morphing Airfoil with flexible Leading and Trailing edge -** Journal of Aerospace Engineering, *Chandan Varma Tamada, Sai Ganesh Sabbavarapu, Deepika Ragutu*, July, 2022, Under Review.
- **Development of Unmanned Air Vehicles Software-In-the-Loop Simulation for Mapping Applications using Ardupilot and AirSim -** IEEE Transactions on Aerospace and Electronic Systems, *Chandan Varma Tamada, Vijay Kumar Kotagiri*, July, 2022, Under Review.
- **Computational Analysis on Heat transfer enhancement with design parameters of a Helical plate Heat exchanger for Aerospace Applications -** Proceedings of International Conference on Energy Conversion and Thermo-fluid Systems (i-CONECTS 2021), Emerging Trends in Energy Conversion and Thermo-Fluid Systems, Springer Proceedings, *Chandan Varma Tamada, Sai Ganesh Sabbavarapu*, Nov, 2021.
- **Flow Visualization of Footballs to analyze the factors affecting their aerodynamic performance using Computational Fluid Dynamics -** International Journal of Innovative Science and Research Technology, *Chandan Varma Tamada, Sai Ganesh Sabbavarapu*, Sept, 2019.
- **Nanofluids based Active Thermal Control System for Spacecrafts -** GLEX 2021 Conference Proceedings, International Astronautical Federation (IAF), Global Space Exploration Conference 2021, St.Petersburg, Russia Federation, *Chandan Varma Tamada, Anshoo Mehra, Sai Ganesh Sabbavarapu, Varun Prasad Gokhale, Mandavi Tiwari, Atharva Pawar, Durga Prasad Thonta, Rishin Aggarwal, Joshit Mohanty*, June, 2021.
- **Thermal Barrier Coated Low Heat Rejection Diesel Engine – Performance and Combustion Characteristics -** 107th Indian Science Congress Association (ISCA), *Chandan Varma Tamada, Prof. Meena Kumari Vangapati*, Jan, 2020.

Skills

Programming: C, C++, Python, MATLAB
Software Packages: ANSYS, SolidWorks, MATLAB, Simulink, OpenFOAM
Languages: Telugu (Native), Hindi, English (Professional)

Organizations

Euroavia (European Association of Aerospace Students) Dec 2020 – Present
Aerodynamics Team Member

Chegg Inc. Oct 2018 – Present
Subject Matter Expert