# Sai Sankalp Shekar

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## Education

**University of Illinois, Urbana Champaign** **Aug 2023 – Present**
*Master of Science in Aerospace Engineering* *GPA: 4.0/4.0*

**Manipal Institute of Technology** **Jul 2018 – Oct 2022**
*Bachelors of Technology in Aeronautical Engineering* *GPA: 8.91/10*

## Technical Skills

**CFD & Optimization Tools**: STAR CCM+, Ansys Fluent, Ansys Icepak, SimScale, HEEDS, OptiSLang
**CAD Software**: SolidWorks, NX , Autodesk Fusion, Catia
**Programming Languages**: Python, MATLAB

## Experience

**University of Illinois, Urbana Champaign** **Sep 2023 – Present**
*Graduate Research Assistant* *Urbana, IL*

- Initiated the development of thermal management models for electric aircrafts to achieve sustainable aviation goals, on RCAIDE - an open-source aircraft modelling application.
- Responsible for implementing a battery testing facility to characterise and analyze various battery packs for realistic load profiles of electric aircraft, under the supervision of Dr Matthew Clarke.

**Collins Aerospace** **Feb 2022– July 2023**
*Graduate Engineer Trainee* *Bangalore, India*

- Evaluated the thermal performance of a new cooling technology called the SpaceChiller™ and optimized the fluid flow to result in a 50% decrease in energy usage, through automation of Computational Fluid Dynamics simulations.
- Consolidated efforts in developing an aircraft-worthy air ionizer up to TRL 5, resulting in the prototype Collins Pothos showcased at AIX Expo 2023.
- Examined the thermal architecture of various power electronic components using Computational Fluid Dynamics and enhanced the performance by 20%.

**Aiotize** **Aug 2021 – Dec 2021**
*Computational Fluid Dynamics Intern* *Remote*

- Conducted comprehensive Fluid-Structure Interaction studies on UAVs, enhancing both their structural safety and reliability, while concurrently optimizing efficiency through judicious material reduction.
- Performed extensive thermal management studies for battery and other electrical components with passive cooling solutions, ensuring their seamless operation within designated temperature ranges.

## Projects

**Turbulent Boundary Layer Studies and Heat Transfer Enhancement** **Jun 2020 – Sep 2022**

- Investigated novel techniques to enhance heat transfer capabilities of Solar Air Heaters, employing Computational Fluid Dynamics for optimization.
- Played an integral role in fostering collaborative teamwork dynamics, effectively communicating findings, and synergizing efforts with diverse stakeholders to achieve research project objectives.

**Rocketry and Aerodynamics** | *Team Lead & Aerodynamics Head, thrustMIT* **Jan 2019 – Aug 2021**

- Pioneered the development of a high-performing sounding rocket capable of reaching 10,300-foot apogee at Spaceport America Cup 2021, securing $10^{th}$ position.
- Enhanced the rocket's performance by integrating Air-brakes, validated via rigorous Computational Fluid Dynamics analyses and Wind Tunnel Tests for precise apogee achievement.

## Publications & Presentations

- **Accepted Abstract - Design and In-Flight Analysis of an Electric Aircraft's Battery Thermal Management System**
  - To be presented at IEEE ITEC 2024, held in Rosemont, IL
- **Accepted Abstract - Physics-Based Approaches for Optimally Sizing Thermal Management Systems for Battery-Electric Aircraft Performing Regional Flights**
  - To presented at AIAA Aviation 2024, heeld in Las Vegas, NV.