

# Amit Anurag

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## SUMMARY

5+ years of experience with specialized experience in the area of vehicle thermal management and aeroacoustics simulations. Proven expertise in optimizing thermal systems for enhanced vehicle performance and reliability. Demonstrated a strong ability to integrate simulation insights with practical engineering solutions.

## EDUCATION

**Indian Institute of Technology, Hyderabad / CGPA: 10.0/10.0**

*M.Tech. Thermo Fluid*

**May 2014 – Jul 2015**

*Hyderabad, India*

**Indian Institute of Technology, Hyderabad / CGPA: 8.2/10.0**

*B.Tech Mechanical Engineering*

**Aug 2010 – May 2014**

*Hyderabad, India*

## WORK EXPERIENCE

**Mercedes Benz Research and Development India**

*Senior CAE Analyst, Climate Control*

**Jul 2015 – Dec 2020**

*Bangalore, India*

### Climate Control of Vehicles

- An investigation of air flow and thermal comfort of MB cars.
- Transient thermal analysis for passenger car in cooling and heating mode.
- CFD modelling of pressure drop and flow distribution of HVAC.
- Develop and optimization of duct-vent system for least flow resistance and desired flow distribution and air directivity.
- Collaboration with Germany team and suppliers, ensuring alignment of product development and successful project outcomes.

### Aeroacoustics Simulations

- Designed experimental setup for aeroacoustics test experiment at Automotive Research Association of India (ARAI).
- Validation of experimental data and improving model accuracy using STAR-CCM+ and LMS VL.
- Prediction of sound radiation at farfield location as well as determining noise sources.

### Multi-phase Simulation

- CFD analysis and validation of windshield de-icing simulations.
- Transient analysis of windshield flow and temperature pattern and validation with test results.
- Modelling of Cowl box performance for water drainage and replicating rain drop simulations.

### Cabin Model Development in 1-D: Shared Responsibility

- Evaluation of coarse grid cabin model and cabin model preparation for various MB cars.

### UPSC Preparation

**Jan 2021 – Jul 2024**

- Qualified prelims in 2022 and wrote mains paper of UPSC.
- Developed reasoning and analytical ability in diverse issue of national and international concerns.

### CD Adapco

*Summer Intern*

**May 2013 – Jul 2013**

### Gasoline Engine

- CFD analysis to predict knock of the 4-valve 4-stroke premixed gasoline engine.
- Study was done by varying the different parameters namely advancing spark time, different equivalence ratios.
- The analysis was done on the standard correlation, table-based correlation and dars-shell based (these all are the different dars library tool available in star-CD) correlation available in the star-CD for knock modelling.

## RELEVANT PROJECTS at IIT Hyderabad

### Experimental Investigation of GDI Spray / *M.Tech Project*

- Pioneered in design and establishment of Schlieren setup at IIT Hyderabad.
- Investigated spray characterization (like liquid penetration length, vapour penetration length) through image processing in Matlab obtained from Schlieren setup.
- Validated experimental data with the commercial available CFD solver like Fluent, Star-CD and Converge.

## **Fuel Spray and mixing in an Internal Combustion Engine** / *B.Tech Honours Project*

- Study was done to maintain charge stratification under different load conditions.
- Investigation was performed to see the factors affecting the air/fuel mixture preparation like cylinder pressure, temperature etc. [Tools: Fluent]

## **Validation and Parametric Study of Shock Tube** / *CFF Project (Compressible Fluid Flow)*

- Sod's model of shock tube flow was validated using STAR-CCM+.
- The tube consisted of circular pipe which was filled with gas.
- It was split into two parts by a diaphragm which was positioned in middle of it and modeled as a discontinuity in initial fluid conditions (density, pressure and temperature) across the surface.

## **SKILLS**

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**Programming Languages:** C++, Python, Java (Beginner)

**Software Skills:** MATLAB, STAR-CCM+, ANSYS, Fluent, Convergent, Open Foam, Solid Works

**Language Proficiency:** English, Hindi.

## **PATENT**

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1. **Split-Baffle for wiper heating & suppressing recirculation zones** [Internal ref: 2019PF03293]

## **MENTORSHIP**

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- Mentored and provided technical guidance to interns from NITs for their M.Tech projects.

## **LEADERSHIP**

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1. **Innovation club coordinator, Mercedes-Benz**
2. **Cultural club coordinator, IIT Hyderabad**