



Akashdeep Singh

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HJB Hall of Residence, Indian Institute of Technology Kharagpur, West Midnapore,
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EDUCATION AND TRAINING

01/07/2019 – CURRENT – West Midnapore, Kharagpur, West Bengal, Kharagpur, India

BACHELOR OF TECHNOLOGY – Indian Institute of Technology, Kharagpur

- **Aerospace:** Dynamics, Low-Speed Aerodynamics, High-Speed Aerodynamics, Unsteady Aerodynamics, Aerospace Propulsion, Flight Vehicle Controls, Flight Stability, Mechanics of Flight, Aerospace Structural Dynamics, Jet Propulsion, Viscous Flow
- **MOOC:** Machine Learning by Andrew Ng, Deep Learning, MATLAB Onramp
- **General:** Programming & Data Structures, Transform Calculus, Basic Electronics, Numerical Solutions to ODE & PDE, Linear Algebra, Differential & Integral Calculus, Probability & Statistics

Field(s) of study

- Aerospace Engineering (Current CGPA - 8.87/10)

01/06/2017 – 01/05/2019 – Naval Base, Willingdon Island, Kochi, Kochi, India

CLASS XII – Navy Children School, Kochi

Field(s) of study

- Physics, Chemistry & Mathematics - Computer Science (94.4%)

01/04/2015 – 01/04/2017 – Naval Base, Arga, Karwar, Karnataka, Karwar, India

CLASS X – Kendriya Vidyalaya, Karwar

Field(s) of study

- Science Stream (CGPA - 10/10)

WORK EXPERIENCE

02/09/2021 – CURRENT – Kharagpur, India

UNDERGRADUATE STUDENT RESEARCHER – BIO-INSPIRED AERO AND HYDRODYNAMICS LABORATORY, IIT KHARAGPUR

- Studied the flow physics and Aerodynamics of a flapping wing motion for single and tandem wing cases. Referred papers by K.B. Lua, S.M. Dash, Qing Xiao, Wei Liao, T.T. Lim, K.S. Yeo, Triantafyllou, X.H. Zhang, H. Lu
- Performed ANSYS Fluent simulations for single flapping-wing cases using dynamic meshing and validated results with K.B. Lua and S.M. Dash's paper.
- Constructed overset mesh for tandem wing cases and performed ANSYS simulations to validate with K.B. Lua's paper.
- Currently investigating the effects of frequency on 2D & 3D tandem wings under the guidance of Prof. S.M. Dash

01/07/2019 – CURRENT – Kharagpur, India

HEAD OF CHASSIS SUBSYSTEM – TEAMKART, IIT KHARAGPUR

- Involved in the design and optimization of the 3D sketch of the chassis of a Formula Student combustion vehicle
- Calculated the torsional stiffness of the chassis of the car and improved it with respect to previous years results
- Designed and assembled CAD model for the torsional stiffness testing setup for the car, using Solidworks
- Developed CAD models for aerodynamic front & rear wing mount brackets and performed static structural analysis
- Supervised and managed the workflow of chassis subsystem to ensure smooth participation of the team in Formula Bharat Virtuals Contest, 2021

01/07/2021 – 11/08/2021 – Bangalore, India

- Studied and understood the general aircraft design process, with an emphasis on the conceptual design of unmanned aircrafts
- Performed a detailed market survey on the existing attack UAVs and compiled the aerodynamic, engine, and performance characteristics of a set of UAVs based on similar size, design requirements, and mission profiles
- Developed a CAD model of an existing attack UAV from a 3-view drawing using OpenVSP and verified the simulation results (aerodynamic coefficients and force-moment coefficients) with existing data
- Performed low-fidelity analysis on the aircraft model using vortex-lattice solver (OpenVSP) by iterating for a set of wing planform sizes, wing sweeps, airfoils and investigating the changes in aerodynamic coefficients
- Plotted flight performance envelopes of the attack UAV for different geometric modifications using Aircraft Performance Program (APP-6.0), analyzed the plots, and revised the configuration layout

PROJECTS

12/08/2021 – 20/11/2021

Shock Tube Design Project (Semester Project)

- Completed the sizing of a small-scale shock tube with PVC tube and Aluminium diaphragm
- Performed ANSYS simulations to determine the flow properties in shock tube and interactions of shock with different geometries downstream of the tube
- Verified the material strength of the tube by conducting static structural simulations for two materials under specified pressure conditions
- Developed a schlieren imaging setup design for the visualization of shocks and interactions

DIGITAL SKILLS

Microsoft Word | Microsoft Excel | Microsoft Powerpoint | Microsoft Office | C/C++ | Python | Matlab | GNU Octave | LaTeX | DS Solidworks (Optimal Knowledge) | AutoDESK AutoCAD (Optimal Knowledge) | Ansys Workbench, Ansys Fluent | LTSpice | SimScale | OpenVSP | APP-6.0

LANGUAGE SKILLS

Mother tongue(s): **PANJABI; PUNJABI**

Other language(s):

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken production	Spoken interaction	
ENGLISH	C2	C2	C2	C2	C2
HINDI	C2	C2	C2	C2	C2

Levels: A1 and A2: Basic user; B1 and B2: Independent user; C1 and C2: Proficient user

HONOURS AND AWARDS

02/11/2021

Formula Bharat Virtuals' 2021 – Formula Bharat, FSAE

- Won the Formula Bharat Virtuals' 2021 by securing an overall 1st place in combustion category and 11th place in the Business Plan Presentation event with 64.19 points out of 75, among 31 participating teams
- Secured 1st prize in the Engineering Design Concept and awarded with Best Powertrain Design Package in CV

Boeing India Mentorship Programme – Boeing

- Awarded with the Boeing Mentorship Programme hosted by IIT Kharagpur and Boeing for UG/PG students