Teja Ala - Curriculum Vitae

CONTACT

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PROFILE

An innovative and self-motivated first-class MEng graduate with an unwavering passion for modelling and numerical simulations. Extensive experience in software development, and analysis with unique exposure to satellite development. Strong emphasis on lateral thinking reinforced by commercial awareness and consistent academic success. Passionate in translating fluid dynamics knowledge onto novel aerodynamics problems: performed DNS studies on supersonic flow over compression ramp and RANS/DES simulations on race car components and UAV profiles.

EDUCATION

MEng. (Hons) Mechanical Engineering, University of Liverpool, 2015 – 2020

First-class honours, 80% (5^{th} in class)

- Thesis Title: *Elastic Turbulence as an initial and boundary value problem*
- Relevant Modules: Advanced Fluid Mechanics, Thermodynamics, Heat Transfer, Aero-Engines.
- Responsibilities: Course-representative for 4 years, University and STEM ambassador.
- Teaching: Assistant for 2 programming modules. Peer mentor for Year 2/3 cohorts.
- Awards: IMechE Best Project Award, Santander Best Class II Team, Excellence Scholarship.

A-Levels, The Blue Coat School Liverpool, 2013 – 2015

*A*AAB, Merit.*

- Modules: Mathematics, Further Mathematics, Physics, Chemistry, AQA Baccalaureate
- EPQ Project: *Feasibility of a Flying broomstick, an aerodynamic perspective.*

EMPLOYMENT

***Research Assistant*, University of Liverpool**, 2020 – Present

Developed a MATLAB code to generate and display iso-surfaces for hypersonic flow simulation. Incorporated self-taught python and bash scripts to automate the smooth running of simulation processes (modified OpenFoam codes) through EPSRC-Tier 2 high-performance computer. Investigated the effects of drag reduction in asymmetric bluff bodies using an Eiffel-type wind tunnel by collecting pressure (ZOC33 scanner) and velocity data (PIV).

***Teaching Assistant*, University of Liverpool**, 2020 – Present

Created teaching material for final year aerodynamics, and programming modules, creating routines for OpenFoam and advanced MATLAB assignments. Successfully taught panel methods coursework to final year aerodynamic students.

***MATLAB Ambassador,* MathWorks**, 2019 – 2020

Successfully competed against Oxbridge students to secure the prestigious student ambassador role which works across the world. Organised seminars, competitions, and information sessions for beginner level MATLAB users. Liaised closely with MathWorks Cambridge and Natick, USA to improve course content on fluid dynamic problems, from boundary-layer equations to 2D finite-volume Euler codes.

***Mechanical Analysis Intern,* Airbus Defence and Space**, 2018 – 2019

Teamed up with senior engineering analysts to create a universal automated software to improve dynamic testing tools for payload structure, enhancing interoperability.

- Explored and incorporated novel meshing techniques, analysis methods accelerating pre-processing.
- Enhanced solver and post-processing workflows reducing analysis times by 62%.
- Led an international development team to produce in C++ (inc. CUDA libraries) that expeditiously compares simulation and test data for rapid on-site decisions.
- Solved a five-year old software issue swiftly using my programming prowess and debugging skills.
- Scheduled and performed vibration tests on satellite antennas meeting the tight commercial deadlines and budgets.
- Created user-friendly GUI using Qt (C++) for the produced analysis program receiving praise from senior engineers during the final presentation.

***Student Researcher,* Institute for Risk and Uncertainty, EPSRC CDT**, 2017 – 2018
Created variance-based SOBOL sensitivity methods using Monte-Carlo sampling methods along with enhanced Bayesian networks for the open-source uncertainty quantification software OpenCossan. Collaborated with international users to improve the software documentation.

Projects

***Team Member,* University of Liverpool Motorsport**, 2015 - 2020
Represented University of Liverpool at the international Formula student competitions designing and manufacturing single-seater race cars.

Head of Data Acquisition and Simulations, 2019 – 2020
Investigated and resolved various discrepancies in the car through meticulous diagnostics, most notably resolving the disparity in aero-suspension interaction. Executed key aerodynamic decisions through simulations (OpenFoam and Fluent) using local high-performance computing access and developed methods for data correlation.

Head of Powertrain and Electronics , 2017 – 2018
Managed a small team ensuring incorporation of wire-harness, sensors, and data-modules in a new chassis. Produced several CAD iterations and manufactured a pedal-box incorporating LVDT sensors. Took ownership to implement car's first-generation electronic throttle control by significantly programming the Cosworth ECU module and designing bespoke throttle body and a fault-check PCB, improving acceleration times by 0.6s. Led the team to successful final presentation at the design event.

Head of Cost, 2018 – 2018
Successfully negotiated 3 prestigious sponsorship deals worth GBP 15,000 for manufacturing parts. Elected by team members to produce cost packages and presentation plan for competition delivery. Led the team to a top 5% finish within a month of enrolment from scratch. Designed a year-long financial model comprising of break-down of cost material, contributing to the

***Deputy Team Leader, Head of Engineering* Solar Challenge Team**, 2017 – 2018
Designed, and manufactured components for a fixed-wing solar UAV to break the British class record while writing embedded codes for on-board telemetry. Oversaw crucial aerodynamic decisions by correlating wind-tunnel (using department's blowdown wind tunnel) and CFD analysis on profiles enhancing flight endurance. Achieved 5 hours of autonomous flight setting an unofficial record.

Roles

2020	**Organiser**	HiPy Python.
2019	**Executive Member**	Royal Aeronautical Society Stevenage.
2018	**Ambassador**	STEM and IET Stevenage.
2018	**Mental-health awareness lead**	Balance for Business, Airbus Stevenage.
2017	**Chair**	Staff-Student Liaison Committee, Liverpool.
2017	**Team Leader**	Liverpool Karting Team.
2017	**Secretary**	Flight Simulator Group.

Skills

Programming

- **Highly skilled:** MATLAB, Simulink, Python, C++, Fortran, LaTeX, Git, Bash.
- **Moderate exposure:** C, HTML, CSS, Google-App Script, VBA, SQL.

Software *(Highly skilled)*

- **Fluids** - OpenFoam, ANSYS Fluent, COMSOL, gmsh, Paraview, Xfoil, XFLR5, OpenPIV.
- **CAD/FEA** - PTC Creo, AutoCAD, CATIA V5, Abaqus, FEMAP, NASTRAN, ISIGHT.
- **Electronics** - EAGLE, Cosworth Toolset, LabView, gEDA, MultiSim.

Languages

English (Native), Telugu, Hindi (Advanced), German, Italian, British Sign (Elementary)

Interests

Chess, Karting, Photography, Football (GK), Tennis, Astronomy, Formula 1, Guitar.