Vikram Pratap Singh

AI Application Engineer — Mechanical & Aerospace

+44 7471 019134 vikramjuly13@gmail.com connectvikram.com LinkedIn Brighton, UK

PROFILE

AI Application Engineer with a Mechanical & Aerospace core. I pair **8+ years of product engineering** (Honda, Maruti Suzuki, Aerotrope) with **AI-driven development** to design, build and deploy complete software products single-handedly — full-stack web apps, containerized cloud services and LLM-integrated tools — delivering in days what traditionally takes teams months. Proof shipped: a live serverless aerodynamics platform and a browser-based CFD suite, both built solo. MSc from Cranfield University (Newell Prize, top of cohort), 2 patents.

AI APPLICATION PORTFOLIO

DFDC Cloud — Serverless Aerodynamics Solver • LIVE 2026

Solo build · connectvikram.com/DFDC

- Modernized MIT's legacy Fortran ducted-fan design code into a public web app: Fortran compiled in a **Docker** image, deployed serverless on **Google Cloud Run** (scale-to-zero, ~$0/month running cost)
- Node.js API + browser UI let non-specialists run real aerodynamic solves in one click
- Integrated a **Gemini-powered AI assistant** with engineered cost governance: rate caps and a hard monthly budget ceiling

CFD Studio — Wind Tunnel in the Browser 2026

Solo build · Windows installer · connectvikram.com/CFD

- Full-stack CFD platform: upload a 3D model (STL/OBJ/PLY) → auto-mesh → **OpenFOAM** RANS solve → drag/lift coefficients, convergence plots and a pressure-coloured 3D surface in the browser
- **Python/FastAPI** backend orchestrates the full solver pipeline (blockMesh → snappyHexMesh → simpleFoam → foamToVTK) across a Windows/WSL2 bridge; results streamed to an interactive **Three.js** viewer via custom VTP parsing and GLB export
- Productized with installer, sample library, health checks and per-stage progress reporting

TECHNICAL SKILLS

AI & Development:
AI-driven development (Claude, Gemini) · LLM API integration & cost governance · Prompt engineering

Software: Python / FastAPI · JavaScript / Node.js · Three.js · HTML / CSS · REST APIs

Cloud & DevOps: Docker · Google Cloud Run · Serverless / scale-to-zero · Linux / WSL2 · Git

Engineering:
CATIA V5 · Siemens NX · SolidWorks · ANSYS / NASTRAN-PATRAN · OpenFOAM · GD&T & DFM

KEY ACHIEVEMENTS

- Shipped 2 complete AI-built applications solo — one live in production
- **Newell Prize** for Best Aircraft Design Project, Cranfield University; top of MSc cohort (82%+)
- **2 patents:** solar e-rickshaw design; Suzuki roof rail reinforcement
- Led design of **Suzuki's first sunroof system** (Brezza 2022), managing 5 engineers
- Built India's first solar-electric vehicle — 10,000 km on Delhi roads, featured in *Business Line*
- Designed a 265 kg eVTOL aircraft and a cryogenic LH_2 tank (−253°C, 2.06 bar)

CAREER HISTORY

Aerotrope Ltd — Design & Development Engineer
Apr 2022 — Present

Brighton, UK — engineering consultancy (airborne wind energy, wind turbines)

- Pioneered concept work on a tethered airborne wind-energy aircraft generating 100 kW; sized fin/tailplane via stability & control analysis
- Optimized empennage internals for 30-year fatigue life; validated hand calculations with ANSYS Workbench FEA
- Established ultimate and fatigue strength of wind-turbine tower sections; designed a 16 m 3D-printed architectural flagpole for a US client

Maruti Suzuki India Ltd — Deputy Manager
May 2019 — Mar 2021

Gurugram, India

- Led design of Suzuki India's first sunroof system (Brezza 2022), managing a team of 5; solved the 9-pin assembly with GD&T and CATIA kinematics
- Devised the first 50 kg loading-type roof rail reinforcement — patented by the company
- Self-learned Siemens UGNX and NASTRAN within one month; delivered 17 production drawings for the first 50 Vitara Brezza models

Honda Cars India Ltd — Executive
Jul 2016 — May 2019

Greater Noida, India

- Led a team of 2 designing the complete BIW roof structure in CATIA V5 for the Thailand model
- Developed a pedestrian-safety-compliant bumper beam; localized an imported noise-cancellation seal — ₹15M profit

EDUCATION

MSc Aerospace Vehicle Design
2021 — 2022

Cranfield University, UK — Newell Prize; top of cohort (82%+)

B.E. Manufacturing Process & Automation
2012 — 2016

NSIT, Delhi University — patented solar EV major project