Mihir Kumar Patel

Computer Science Student — Space and Aviation Software

Darmstadt, Germany
+49 176 4719 2859
m1hr.pat@gmail.com
M1keP1
m1hr-pat

Education

Mar 2023 – Present **B.Sc. Computer Science (Informatik)**, *Hochschule Darmstadt*, Germany
- Focus: AI/ML, Geospatial Data, HCI, SDR.
- Nominated for upcoming **Erasmus BIP Program** at **Université Jean Monnet, Saint-Étienne, France**.
- Relevant coursework: Software Engineering, Databases (SQL, PostgreSQL), C++/Qt development, Networks, Visual Computing, IT Security, AI/ML.

Feb 2022 – Feb 2023 **University Entrance Qualification (equiv. Abitur via Studienkolleg)**, *Hochschule Zittau/Görlitz*, Germany
- Completed preparatory program for non-EU students, achieved **German C1**.

Experience

Aug 2024 – Present **The Boeing Company – Digital Aviation Solutions (Jeppesen)**, *Working Student*, Neu-Isenburg
- Designed and developed **Python applications** to automate conversion, verification, and ingestion of **geospatial obstacle and airport data**.
- Worked with **flight-critical civilian and military datasets**, ensuring accuracy through rigorous testing and **multi-step verification** aligned with **aviation standards**.
- Independently identified inefficiencies in a **critical** workflow and designed an **automated** pipeline, saving effort equivalent to **2 FTEs** annually, later extended by an offshore team for scaling and integration.
- Conducted **testing and QA** of **geospatial workflows**, improving data reliability.
- Modernized workflows by **migrating legacy systems** into more efficient digital solutions.
- Enhanced internal tools with **ArcGIS**, **satellite imagery processing**, **Python scripting**, and reusable **shell scripts**; packaged for smooth deployment.
- Prepared **user-facing documentation** and **validation guides** for internal tools using **Confluence** and **SharePoint**, supporting analyst adoption and training.

Projects

2025 **SatTrack - Satellite Tracking Dashboard**, *Ongoing personal project*
A modern satellite tracking platform designed to **democratize space awareness** - live orbit views, pass predictions, and smart insights to help enthusiasts better understand satellites flying above.
- Implemented **real-time orbit propagation** from TLE data with satellite.js and 3D visualization using **Cesium**.
- Developed **pass prediction algorithms** (azimuth, elevation, range) for real-time flyover visibility.
- Prototyped an **AI module** for future natural-language queries about satellites and missions (not yet live).

Oct 2024 – Present **CASIMAR AR/VR Astronaut Training**, *TU Darmstadt (TUDSAT Student Club)*
Voluntary project in early-phase research. Contributed to requirements analysis, tooling exploration, and workflow design for immersive AR/VR astronaut training environments in a multidisciplinary student team.

Skills

Programming	Python, C++/Qt, TypeScript/JavaScript/React; familiar with Java
Space & Geo	Orbit propagation (TLEs, basic orbital mechanics), pass prediction & scheduling, geospatial visualization (CesiumJS/Resium, ArcGIS, GDAL, rasterio), satellite imagery processing
AI/ML	scikit-learn, PyTorch (basics), data preprocessing, model integration in applications
DevOps	Linux, Docker, Kubernetes, Git/GitLab CI/CD, Bash scripting, Agile/Scrum workflows, Jira, Confluence
Databases	PostgreSQL, SQLite, ORM/RDBMS; migration from legacy MS Access
Data Comms	REST APIs, client-server communication, data streaming, network protocol integration
QA	V&V, functional testing, performance monitoring, SonarQube, Ruff, CI integration
Languages	English (fluent, professional proficiency), German (C1 CEFR), Hindi