Kshitij Savanna

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Profile

Third-semester Intelligent Mechatronic Systems student at Hochschule Heilbronn (GPA 1.7, grade 1.0 in Programming 2) and Deutschlandstipendium recipient. Combines formal training in mechanics, materials science and system modelling with self-directed software development, building and shipping working applications end to end, from cash-flow forecasting engines to vision-based LLM tooling. Won first place at an AI hackathon and was invited by a regional water utility to continue the solution as a first-semester student. Active in the university racing team and student union. Aiming for a career in motorsport or aerospace engineering, followed by a master's degree in aerospace engineering.

Education

Hochschule Heilbronn – University of Applied Sciences Oct 2025 – Present
B.Sc. Intelligent Mechatronic Systems | Current GPA 1.7 (German scale, 1.0 = best) *Heilbronn, Germany*

- **Programming 2: grade 1.0.** Completed: engineering mathematics, physics, Engineering Mechanics 1–3, materials science (metals and plastics), electrical engineering and electronics, Programming 1 and 2 (C).
- Current semester: signals and systems, metrology and sensors, manufacturing technology, engineering design, microcontrollers and software engineering, data science.

Tenby International School, Ipoh 2022 – 2024
A-Levels (A, 2B) and IGCSE (1A, 6A, 2B) | Merit Scholarship | Valedictorian* *Ipoh, Malaysia*

- A-Level: Mathematics 84%, Physics 78%, Chemistry 78%. IGCSE: Physics 90%, English Language 89%, Mathematics 84%.

Technical Skills

Programming: C, JavaScript (ES6+), Python (numerical methods), Java, HTML/CSS, LaTeX
Web & Frameworks: React, Tailwind CSS, hand-coded SVG rendering, Web Notification API, localStorage, Netlify and Cloudflare hosting
Systems, APIs & AI: Linux command line, Git, REST/JSON integration, Anthropic API (text and vision), AI coding tools (Claude Code)
Engineering: CATIA, XFLR5, Blender, applied mechanics, system modelling
Embedded & Fabrication: ESP32, MPU6050 IMU, HX711 load cell amplifier, 3D printing
Media & Office: video editing, Word, Excel (engineering calculations), PowerPoint, Outlook, Teams

Engineering & Applied Projects

Aerodynamic RC Vehicle | *Inverted-running downforce study, research phase* 2026 – Present

- Planning an RC vehicle that generates more downforce than its own weight, with the goal of driving inverted.
- Structured as a 10-phase roadmap: turning the goal into testable requirements (downforce needed for a given mass and speed, structural limits per part), wing design in XFLR5, fabrication via 3D printing and carbon fibre, static downforce validation on an HX711 load-cell rig, and ESP32/MPU6050 telemetry to compare driving data against predictions.
- Each phase closes with a validation step before the next begins.

AI Legacy Data Conversion Hackathon | *First place, category winner* 2025

- Partnered with a regional water utility to convert legacy infrastructure records into modern, machine-readable formats suitable for AI-driven analysis; presented the solution to the judging panel.
- Awarded first place in category for innovation and practical implementation; subsequently invited to continue working with the utility on the case as a first-semester student.
- Emphasised data accessibility, workflow efficiency and forward compatibility with intelligent systems.

Cosmic Journey | *Aerodynamics Workshop Lead* Aug 2023 – Mar 2024

- Designed and delivered a recurring aerodynamics workshop for students aged 12–15, covering lift, drag and flight stability.
- Built and launched model rockets, estimating flight trajectories with simplified analytical models and validating predictions against measured flight results.

Software & Web Projects

Flowr | *Personal finance forecasting app; React, Tailwind CSS, JavaScript* 2026

- Built a single-page cash-flow forecasting app projecting a day-by-day account balance from a fixed monthly payout cycle against recurring fixed bills and variable spending.
- Designed an alert engine that flags projected shortfalls ahead of scheduled direct debits, addressing a real failure case where an insufficient balance caused a rejected payment.
- Implemented five interlinked modules: forecasting, expense CRUD with categorisation and search, IOU/debt tracking, analytics and a dashboard overview.
- Hand-coded all SVG chart rendering rather than importing a charting library; persisted state client-side via localStorage.

Plate Log | *Vision-based nutrition diary; JavaScript, Anthropic Vision API* 2026

- Developed a food diary that sends a photographed meal to a multimodal model and returns structured JSON estimates of calories, protein, carbohydrates, fat, fibre and a model confidence score.
- Engineered a conversational correction loop: the model describes what it detected, the user corrects misidentified items in free text, and the estimate is recomputed before the entry is committed.
- Added client-side image resizing to reduce payload size, scheduled meal reminders via the browser Notification API, and a persistent diary grouped by day with running daily totals.

IMS2 Study Guide | *Semester revision web app; JavaScript, Netlify* | live site 2026 – Present

- Built and deployed a revision app covering the full IMS2 semester curriculum at Hochschule Heilbronn, used daily through the SS2026 exam period and shared with classmates who asked to use it for their own revision.
- Structured content into topic-based units with per-topic progress tracking and a persistent overall completion indicator, so revision state carries across sessions.
- Made the app fully offline-capable; maintained as an ongoing system, with new module content added each semester.

Business Website | *Wellness consulting venture; hosted on Cloudflare* 2026

- Building and hosting the website for a small wellness business consulting venture, covering page structure, content layout, consistent visual design and deployment.

Personal Portfolio | *Engineering and software portfolio* | live site 2026

- Designed and built a personal portfolio site presenting engineering and software projects, with motion design and a responsive layout.

University Engagement

Member, Technical Team, University Racing Team Present
Hochschule Heilbronn *Heilbronn, Germany*

- Contributed to work on the electrical braking system.

Volunteer, AStA (Student Union) Present
Hochschule Heilbronn *Heilbronn, Germany*

- Help organise and run student events, including setup and on-the-day support.

Peer support: regularly help fellow students and juniors prepare for exams, and help new students settle into university life.

Leadership & Organisation

Secretary General, Tenby Ipoh Model United Nations Aug 2023 – Jan 2024
International conference, 125 delegates from across Southeast Asia *Ipoh, Malaysia*

- Directed the conference, owning logistics, budgeting and coordination of multiple sub-teams.
- Delivered the conference at a financial surplus against budget.

Vice President, Interact Club Aug 2021 – Dec 2021
Community service, 45-member team *Ipoh, Malaysia*

- Coordinated community service initiatives across the team.

Awards, Languages & Interests

Awards: Deutschlandstipendium (awarded 2026, from summer semester 2027), Valedictorian (Campus Principal Award, 2024), Academic Achievement Award in Mathematics (2024), Academic Progress Award in Chemistry (2024), Merit Scholarship for A-Levels, multiple recognitions at national-level Model United Nations conferences
Languages: English (C1/C2), Hindi (C1), German (A2; B1 course in progress at HHN, B2 to follow), Malay (A1), Mandarin (A1)
Interests: Formula 1 and motorsport, aerospace systems and rocketry, triathlon and endurance training, mountaineering and hiking, vehicle technology