Ved Agwekar

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Education

University of Waterloo — Waterloo, ON
Honours Bachelor of Mathematics, Co-op — *Sept. 2026 – Apr. 2031*

Experience

Perception & Vision Team Member — Sept. 2026 – Present
Sustainable Physical AI Society (SPAIS) — *Waterloo, ON*

- Building vision for a strawberry-farm robot that maps weeds and flags crop-disease symptoms for growers
- Developing a crop-vs-weed segmentation pipeline in PyTorch and OpenCV, evaluated on IoU and weed recall
- Researching thermal heat and entropy signatures to detect ground frost and automate frost sprinklers

Embedded Flight Software Team Member — Nov. 2026 – Present
Waterloo Aerial Robotics Group (WARG) — *Waterloo, ON*

- Developing sensor drivers in C/C++ for ZeroPilot, WARG's in-house autopilot for autonomous UAVs
- Writing embedded C on STM32 microcontrollers: pin configuration from schematics, SPI, and PWM output
- Shipping code through GitHub pull requests with peer review and Google Test unit tests

Full Stack Developer — Sept. 2025 – Present
Youth Policy Council — *Calgary, AB (Remote)*

- Built and run youthpolicycouncil.ca end to end in Next.js, TypeScript, and Tailwind, from design to deployment
- Designed a Supabase (PostgreSQL) back end for registrations and analytics, with an admin dashboard
- Wrote 190+ Vitest and Playwright tests, including automated WCAG AA accessibility checks on every page
- Set up CI/CD with GitHub Actions and Vercel: PRs must pass types, lint, tests, and build; merges auto-deploy

Projects

Lightning Response (Hackathon Winner) | *Python, FastAPI, LightGBM* — GitHub | Sept. 2026

- Won the Ollon safety challenge at FormulaTech Hacks with a team of 4, building an AI pit wall for tyre safety
- Trained LightGBM on 138,683 F1 laps, flagging lock-ups 0.5 s and wheelspin 1.75 s early at 0.96+ AUC
- Cut the train–test gap from 0.15 to 0.05 with season splits; called Hamilton's 2020 Silverstone failure 15 laps early

CETR Index | *Python, pandas, SciPy, pytest* — GitHub | June 2026 – Present

- Building an open-source pipeline scoring Canada's 10 provinces on energy transition risk from StatCan/CER data
- Checked ranking robustness across four normalization methods, requiring a Spearman correlation of at least 0.90
- Wrote 39 unit, methodology and sanity tests, with GitHub Actions for CI and quarterly data refreshes

Home ML Server | *Debian Linux, Bash, NVIDIA drivers, SSH, Rust* — Oct. 2026 – Present

- Repurposed an ASUS ROG Strix G15 laptop into a headless Debian server, run entirely from the command line
- Installed proprietary NVIDIA drivers from Debian's non-free repositories, verifying GPU access with nvidia-smi
- Building a Rust inference server to run and train ML models on the GPU around the clock

Leadership

Co-Secretary-General, WiseMUN III — May 2025 – Mar. 2026
Henry Wise Wood Model United Nations — *Calgary, AB*

- Led the Secretariat running the school's Model UN conference; also served as Secretary-General and Head Chair

Co-Chapter Head & VP of Technology — June 2025 – June 2026
STEM Fellowship, Henry Wise Wood Chapter — *Calgary, AB*

Technical Skills

Languages: Python, C/C++, TypeScript, JavaScript, Java, SQL, HTML/CSS, Bash; learning Rust
Libraries/Frameworks: PyTorch, OpenCV, Next.js, React, Tailwind, FastAPI, pandas, scikit-learn, LightGBM
Tools: Git, GitHub Actions, Vercel, Supabase, STM32CubeIDE, Google Test, Vitest, Playwright, pytest, Linux
Interests: Basketball, anime, guitar, geopolitics, philosophy