

ARYAMAN VERMA

SOFTWARE ENGINEER



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PROFILE INFO

Engineer at STEAG Energy Services developing Python desktop software for production workflows. Experience with PySide6, FastAPI, SQL, web scraping, and ML applications with a focus on building reliable and maintainable tools.

EDUCATION

Bachelor of Engineering in 'Computer Science & Engineering' (CSE) — (2021-25)

(JSS Academy of Technical Education, Noida | CGPA - 8.54)

Higher Secondary (CBSE) | 2021 | 97.6%

JEE Main 2021 | 96.79 Percentile

EXPERIENCE

Software Engineer | Steag Energy Services(Steag GmbH Germany)

(July'25 -Present)

SteagSIM - Node-Based Simulation Engine

- **Project Aim:** Developed a decoupled simulation environment used by analysts for modeling sub-systems (e.g., IOCL Oil Storage facilities), reducing reliance on legacy proprietary software.
- **Architecture:** A multi-process runtime combining a custom BFS/Topo-sort engine for discrete control logic (100Hz) with a matrix solver for continuous process physics via a custom AST parser.
- **Performance:** Optimized system state persistence via Protobuf and benchmarked discrete control execution at ~55ms for complex 10,000-node models.
- **HMI Integration:** Simulation environment is integrated with Wonderware InTouch HMI screens through STEAG OPC-DA Server via OpenOPC.
- **Tech Stack:** PySide6, NodeGraphQt, OpenOPC-DA, Protobuf

SESI S-Vision - Real-Time Plant Safety Monitor

- **Project Aim:** An on-premise computer vision system (Live PoC) deployed at the **THDC 1320 MW Khurja Supercritical Thermal Power Plant** to monitor 20+ classes of PPE compliance and detect environmental hazards.
- **Architecture & Performance:** A Python/FastAPI backend utilizes YOLO for object detection. System achieved throughput of ~60 FPS concurrently processing 20 live RTSP camera streams at 3 FPS on a single edge node.
- **Web Utilities & Spatial Logic:** Dashboard features live views, Google Maps camera tracking, and customizable spatial zone-mapping (e.g., triggering alerts via bounding-box intersections for height-work detection).
- **Alert Engine & Worker ID:** FAISS vector search for worker facial recognition. Email alerts are sent to the admin/control room to ensure timely awareness of PPE violations and safety hazards in the plant environment.
- **Tech Stack:** Python, MySQL, OpenCV, YOLO

PROJECTS

Weave - Local-First Graph & Canvas Editor

- Built a visual graph/canvas editor with nodes, styled edges, groups, and sticky notes on a zoomable infinite canvas
- Implemented one-click git-based sync across machines, with smart setup handling and safe conflict resolution
- Designed a live-updating file explorer, custom color picker, and full settings panel for themes and custom fields
- Created dual save formats (readable JSON + compressed) and one-click image export
- Polished the interface with a responsive toolbar, dark/light themes, and keyboard shortcuts for smooth workflow.

Deep Chef: Find Your Recipe

- Web application that allows users to upload an image of food and automatically retrieves the recipe for the dish. Solution combines computer vision, web scraping, and a custom-trained deep learning model with over 7,000-8,000 images across 380+ recipes.
- Tech-Stack :-
 - **Image Recognition Model :** Keras, Pillow
 - **Web Scraping(images and recipes):** Selenium, BeautifulSoup
 - **Full-Stack Web App :** FastAPI, CSS, HTML