Sahana Prabhu

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PROFESSIONAL SUMMARY

Results-driven Computer Engineering student with proven ability to build end-to-end data pipelines, agentic AI systems, and workflow automation solutions. Agile learner eager to leverage technical expertise in data validation, and ML deployment to deliver client-focused solutions that prove business value.

SKILLS

- **Programming:** Python (Pandas, Pydantic, Streamlit, LangChain) • C/C++ • MATLAB • SystemVerilog
- **Technical Capabilities:** Machine Learning (ResNet, YOLOv8, TensorFlow) • Agentic AI & Multi-Agent Systems • Data Pipeline Engineering & ETL• Data Quality Validation • Automated Monitoring • RTL Design & Debugging • IoT & Sensor Integration • Google Cloud Computing Foundations • Git/Perforce • Linux • Confluence/Jira • Kanban
- **Core Competencies:** Client Engagement • Cross-Functional Collaboration • Technical Communication & Storytelling • Team Leadership • Strong Analytic & Problem-Solving Skills • Zero-Based Process Design

EDUCATION

Faculty of Applied Science and Engineering, University of Toronto **Expected June 2026**
BASc Computer Engineering, Minor: Artificial Intelligence, Sustainable Energy

- **Honors & Awards:** Engineering International Scholarship Awardee | Dean's Honour List (4/6 semesters)
- **Extracurriculars:** EDI Chair, Frosh Week | Photographer, Frosh Week | Choreographer, Skule Nite

EXPERIENCE

Agentic Clinical Trial Screener | Live Demo: sahana-clinical-agent.streamlit.app Dec 2025
GitHub: github.com/Sahana-1502/clinical_agentic_screener

- Architected **modular agentic AI system** for pharmaceutical patient-trial matching using **zero-based process redesign**, reducing screening time from about 2-3 hours to 5 minutes (96% improvement)
- Built **multi-agent workflow orchestration** with PatientExtractionAgent and TrialMatchingAgent, processing unstructured medical records with explainable AI reasoning and real-time confidence scoring
- Implemented **enterprise data validation pipeline** using Pydantic models to ensure data integrity across patient demographics and biomarkers with automated error handling, type safety enforcement, and comprehensive audit logging for regulatory compliance
- Designed **consumer-grade Streamlit interface deployed to production** with human-in-the-loop validation, enabling clinicians to review AI decisions and approve matches through accessible UI
- Established **automated monitoring framework** tracking workflow metrics (success rate, average confidence, matches per trial) with full audit trails, proving technical capability in MLOps

Digital Verification Engineering Intern, Synopsys | Mississauga, Canada May 2024 - Aug. 2025

- Developed and maintained **constrained-random SystemVerilog UVM testbenches** for **PCIe PHY IP** verification, debugging RTL simulations using Synopsys Verdi to identify critical corner cases.
- **Collaborated across design, analog, and verification teams** to identify root causes and drive solutions, applying data-driven validation approaches to ensure protocol compliance
- **Trained four verification teams** through hands-on onboarding materials, showcasing excellent communication skills by translating complex technical concepts into engaging, accessible resources that accelerated new engineer integration
- Persistently drove solutions forward when facing resistance from design teams, applying analytic skills and compelling technical communication to gain consensus on changes and ensure timely releases

Bird Species Classification using Deep Learning | University of Toronto, Canada Jan. 2024 - May 2024

- Developed a scalable **ML deployment pipeline** using Python, YOLOv8, and TensorFlow, processing 11,788+ images and implementing transfer learning with ResNet-101, **achieving 8x improvement over baseline and demonstrating production ML engineering best practices**
- Architected a custom classifier with dropout regularization and average pooling layers, making solution architecture decisions to combat overfitting while achieving 82.41% test accuracy **for conservation applications**
- **Implemented automated model monitoring** with early stopping and learning rate scheduling, optimizing convergence and achieving 81.06% validation accuracy and 97% training accuracy **across 200 species classes**

Researcher, High-Performance Computing Center Stuttgart | Stuttgart, Germany Jun. 2023 - Aug. 2023

- Engineered **C++ data ingestion pipelines** for COVISE and OpenCover visualization platforms, creating custom algorithms for traffic trajectory data extraction and 3D rendering, **converting diverse data formats into structured datasets for urban planning applications**
- Built automated data **processing** pipeline in C++, converting diverse trajectory data formats into structured datasets and reducing data processing time by 30% through optimized parsing algorithms **and scalable solution architecture**
- Implemented computational methods in C++ to **analyze pedestrian-vehicle interactions at intersections,** developing novel analytical approaches for safer intersection design optimization

Laidlaw Scholar (https://tinyurl.com/laidlawSP) & Reach Alliance Researcher | UofT Jun. 2022 - Sept. 2025

- Conducted comprehensive **literature review on blockchain-backed NFC technology** for humanitarian aid, **identifying key research gaps and translating technical capabilities into business value** for disaster-prone communities.
- **Designed and executed qualitative research methodology**, leading 20+ stakeholder interviews with community leaders, aid organizations, and technology providers in **disaster-prone communities (Vanuatu)**, gathering qualitative insights on challenges and opportunities for NFC-based aid distribution systems
- **Developed data analysis framework using** Python and created visualizations, presenting research at Reach Conference '23 in Mexico to 50+ researchers, faculty mentors, and industry leaders **with actionable policy recommendations**

Community Outreach Director & ECE Class Representative, EngSoc | UofT Sep. 2023 - May 2024

- **Planned and executed strategic events** across multiple channels, achieving **40% increase in engineering** student program participation.
- Advocated for **400+ ECE students by negotiating with university administration** to secure improved exam schedules, fairer accommodations, professor replacements, and increased dinner dance funding.
- **Identified student pain points and facilitated solutions** between students and administration, strengthening relationships and achieving measurable improvements in student satisfaction.

Project Management Intern, Soap Cycling Singapore | Singapore Apr. 2020 - Jul. 2020

- Analyzed collection data **using statistical methods** to project COVID-19 scenarios for recycling expansion, forecasting savings of **1,400+ bottles and 72+ liters** of soap to inform stakeholder decisions **on sustainability initiatives**
- Optimized warehouse inventory systems by assessing capacity constraints and advising on data-driven solution architecture for recycled materials management **with efficient storage and retrieval processes**
- Developed a **business proposal with partner criteria** and **cost-benefit analysis**, presenting recommendations that aligned technical feasibility with strategic goals.