Shouvik Ahmed Antu

AI R&D | Education | Multi-Modal Learning | LLM Applications
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GitHub | Portfolio | Linkedin

Education

University of Pompeu Fabra — Barcelona, Spain
Erasmus Mundus Masters in Artificial Intelligence (EMAI) — Sep 2026 - Aug 2028
Full EMJM Scholarship

Willamette University — Salem, Oregon
Bachelor of Science in Computer Science and Data Science — Aug 2022 - May 2026
School of Computing and Information Science (SCIS)
GPA: 3.9 *(Summa cum laude)*

University of Birmingham — Birmingham, England
Computer Science, Study Abroad — Jan 2025 - Jun 2025
GPA: 4

Publications & Working papers

- **Antu, S.A**., & Cordova, L. (2027) Let Them Think Out Loud: Designing Voice AI for Reasoning and Reflection in Computing Courses *(Accepted at SIGCSE TS 2027)*
- Deutschbein, C., & **Ahmed Antu, S**. (2025). Engaging with the Wiphala: A Code-Generation Hardened CS1 Final. The Journal of Computing Sciences in Colleges. https://dl.acm.org/doi/abs/10.5555/3778141.3778149
- **Antu, S.**, Chen, H., & Richards, C. (2023). Using LLM (Large Language Model) to Improve Efficiency in Literature Review for Undergraduate Research. https://ceur-ws.org/Vol-3487/short2.pdf
- **Antu, S. A**., Shrimali, R., & Jones, M. (2023). An Exploration Into the Collatz Conjecture with Changed Parameters. ArXiv.org. https://arxiv.org/abs/2305.01017

Research Experience

Universitat Pompeu Fabra, TIDE Lab | Research Assistant — *Oct 2026 - Present*

- Develop research software in Python to analyse educational interaction data, turning qualitative coding into reproducible quantitative pipelines.
- Apply learning analytics and network-based methods to study collaboration and learning processes in technology-enhanced learning environments.
- Design scalable, well-tested data workflows that support both exploratory analysis and deployment within research systems.

Willamette University AI4ED Lab | Research Assistant — *June 2025 - Present*

- Investigating how non-evaluative, voice-first dialogue improves student reasoning and accelerates disclosure of confusion.
- Designed a modular prompt architecture with dynamic personas, tailored feedback modes, and system-level behavioral controls.
- Building automated frameworks to score reasoning quality—evaluating evidence use, trade-off analysis, and argument structure directly from voice transcripts.

Willamette University Vision Lab | CS Research Assistant *June 2025 - May 2026*

- Work with hybrid deep learning and classical computer vision models for image alignment tasks (e.g., homography estimation, optical flow), running inference on custom inputs and adjusting parameters to explore model behavior.
- Use PyTorch and TensorFlow-based multi-modal architectures that integrate RGB and frequency-domain data, modifying pre-built pipelines to test performance on digital media.
- Explore computer vision techniques for image forensics by experimenting with existing models for manipulation localization based on JPEG and DCT artifacts, and interpret their outputs across various visual samples.

Willamette University SCIS | SCRP Research Assistant Gen-AI *May - Aug 2023*

- Co-authored research on an AI-driven pedagogical tool aimed at reducing instructor burnout and enhancing student engagement
- Detailed the architecture of the tool, leveraging Large Language Models (LLMs) for AI-mediated conversations and automated assessments
- Contributed to the design of adaptive AI agents, conceptualizing a RAG framework for personalized learning pathways

Willamette University Business School | Research Assistant Salem, OR | Aug - Dec 2024

- Understanding Stated Collaborator Preferences in LLMs as a Foundation for Predicting Agentic Social Decision Making
- Laid the foundation for deploying behavioral science methods in LLM testing
- Developed scripts that allowed for systematic variation across adjustable model parameters

Teaching Experience

Willamette University SCIS | Colloquium Associate *Aug - Dec 2024*

- Assist in teaching the "Thinking Machines" course by leading discussions and guiding students through programming exercises to explore AI and ML concepts.
- Provide academic support and one-on-one tutoring during office hours, helping students understand computational thinking and its societal implications.
- Collaborate with the professor to develop course materials, lead the lab session, and activities that enhance student engagement and foster student success.

Willamette University | Section Leader *Aug 2025 - Present*

- Led weekly 1-hour lab sections for a cohort of 8-10 introductory Computer Science students to review course material and practice coding.
- Provided targeted academic support as a primary resource, offering one-on-one tutoring, code troubleshooting, and staffing the student help center.
- Evaluated and provided detailed feedback on student projects, collaborating directly with faculty in weekly prep meetings and joint "grading parties" to ensure consistency.

Private Tutor | Independent *2019 – Present (on an ongoing, periodic basis)*

- Provide individualized tutoring to high school and undergraduate students in Introductory Physics, CS1, CS2, Algebra I & II, Precalculus, Calculus, and Introductory Statistics.
- Develop adaptive lesson plans and practice problems tailored to each student’s learning style and academic goals.
- Incorporate computational examples using Python for conceptual reinforcement in physics and statistics.

Work Experience

Willamette WITS | Web Development Intern *May 2023 - Aug 2024*

- Debugged and fixed a recurring PHP database lagging issue, improving data retrieval efficiency and reducing load times.
- Transformed the new student orientation grouping process with a Python-based automation, cutting down the time from days to a mere 15 minutes.
- Implemented PHP code refactoring, which resulted in a 15% increase in application performance.

Willamette University Housing | Resident Advisor *Aug 2023 - Dec 2024*

- Organized need-based initiatives to enhance community bonds and academic development among residents.
- Managed dormitory life, fostering a positive and inclusive atmosphere while resolving conflicts effectively.
- Designed and executed diverse social and educational events, boosting student involvement and cultural awareness.

McMinnville Soccer Club (MSC) | Web Developer Intern *Apr 2024 - Sept 2024*

- Updated and built new web pages, conducting thorough quality assessments including cross-browser compatibility checks and mobile responsiveness testing.
- Rebuilt MSC's entire web communication infrastructure including social media presence.
- Implemented SEO strategies such as keyword optimization, meta-tag enhancements, and backlink analysis to improve website visibility and search rankings.

Skills

- **Languages:** Python, JavaScript/TypeScript, SQL, Bash, PHP
- **AI & ML:** LLMs, RAG, Vector Databases (Pinecone), Embeddings, Fine-tuning, TensorFlow, Scikit-learn Frameworks & Tools: LangChain, LangGraph, OpenAI API, Docker, Firebase/Firestore, Next.js, React, Git/GitHub
- **DevOps/MLOps:** Docker, CI/CD fundamentals, containerized deployment
- **Databases:** PostgreSQL, MongoDB, Firebase Firestore, Supabase

Certifications

- Building Autonomous AI Agents with LangGraph 2025 - Coursera
- Introduction to Artificial Intelligence (AI) 2025 - Coursera - IBM
- Fundamentals of AI Agents Using RAG and LangChain 2025 - Coursera - IBM
- Generative AI Advanced Fine-Tuning for LLMs 2025 - Coursera - IBM
- Supervised Machine Learning: Regression and Classification 2024 - Coursera - AI

Presentations

- **Engaging The Wiphala, Consortium for Computing Sciences in Colleges**
    - Rocky Mountain, Utah | Oct, 2024
- **AI in Education: Empowering Instructors, Engaging Learners**
    - Student Scholarship Recognition Day, Willamette University | April 2024
- **Large Language Models in Higher Education: Applications & Uses**
    - Techbytes, Willamette SCIS | Oct 2023
- **Using LLM to improve Literature Review Efficiency**
    - AI4ED Workshop - Tokyo, Japan (Virtual) | Sept 2023

Awards & Honors

- **Erasmus Mundus Joint Master Scholarship** – European Master in Artificial Intelligence (EMAI), European Commission, 2026–2028
- Mary Stuart Rogers **Academic** Scholar - Willamette University, 2025
- Full Tuition **Merit** Scholarship - Willamette University, 2022-2026
- Fairweather Scholarship for **Data Science** - Willamette University, 2022-2026
- Fairweather **Research** Scholarship - Willamette University, 2022-2026
- Honor Roll - Willamette University, 2022, 2023, 2024, 2025
- Youth Exchange and Study (YES) Scholar - Full scholarship to study for an academic year in the US, 2021-2022
- Student of the Year - Bangladesh International School and College, Dhaka | 2019

Clubs & Organizations

- **Gladiator Volleyball (Semi-Professional Team)** - Compete in regional-level volleyball events and maintain advanced athletic performance.
- **Computer Science Club, Willamette University** - Active member participating in technical workshops and coding projects.
- **Willamette ICBSC Team (2026)** - Selected team member representing Willamette University in the International Collegiate Business Strategy Competition, contributing to simulation-based business and strategic decision-making.
- **Willamette University Club Volleyball** - Captain & Treasurer; leading the competitive volleyball club and organizing tournaments and practices.
- **Willamette Intramural Sports Program** - Regular participant in campus-wide recreational sports, fostering teamwork and community.