Mononito Goswami

Applied Scientist at Amazon
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Technical Expertise

I specialize in building LLM agents and foundation models for *structured data* (time series, tables, and code). I am broadly interested in developing pragmatic machine learning solutions for applications in critical and social sectors such as healthcare and education.

Education

Doctor of Philosophy, School of Computer Science 2025
Carnegie Mellon University, Pittsburgh, USA
- Centre for Machine Learning and Health (CMLH) 2021 Fellow

Bachelor of Technology in Computer Engineering 2020
Delhi Technological University, New Delhi, India

Recent Professional Experience

Applied Scientist II June 2025 – Present
Amazon Web Services, Seattle, USA

- Researching techniques to quickly build and evaluate capable software engineering agents.

Student Researcher May – December 2024
Google Research, New York, USA

- Conducted machine learning research focused on developing, pre-training, and benchmarking **tabular foundation models** with rich textual features.
- Designed and implemented two critical architectural enhancements to the IngesTables framework: resolving fundamental scaling bottlenecks that previously limited model size, and improved numeric feature processing.
- Redesigned the technical infrastructure to enable broader community adoption and research collaboration.

Applied Scientist Intern May – August 2023
Amazon Web Services AI Labs, Seattle, USA

- Built the first **time series foundation model**, creating the `MOMENT` family of models.
- `MOMENT` models are widely used across multiple time series tasks and domains, with over 2.5 million downloads on HuggingFace, and $2.5 million in follow-up research funding.
- Showed that large-scale pre-training enables time series foundation models to speed up time series model development.

Applied Scientist Intern May – August 2022
Amazon Web Services AI Labs, Seattle, USA

- Developed the first algorithm for unsupervised model selection of time series anomaly detection models, solving the problem of choosing models without labeled data– critical for real-world applications where labels are expensive or unavailable.

- Built and open-sourced implementations of the model selection method, synthetic anomaly generators, and detection models with widespread adoption by researchers.

Summary: I have built technology with real-world impact in education, finance, taxation, and accessibility. At CMU, I developed [models] to detect how children think while solving math problems and [tools] to improve intelligent tutoring systems. At PhillipCapital, I analyzed how emerging technology impacts finance. I designed data analytics frameworks for India's Goods and Services Tax at GSTN and built Grade-1 Unified English Braille conversion tools at C-DAC.

Selected Conference Articles

Summary: **29 peer-reviewed publications**, including **first-author papers** at NeurIPS, ICML, and ICLR, with 500+ citations.

** indicates equal contribution*

6. Cai, Yifu*, Xinyu Li*, **Mononito Goswami***, Michał Wiliński*, Gus Welter, Artur Dubrawski. "*TimeSeriesGym: A Scalable Benchmark for (Time Series) Machine Learning Engineering Agents.*"
5. Wiliński, Michał, **Mononito Goswami**, Nina Żukowska*, Willa Potosnak*, and Artur Dubrawski. "*Exploring Representations and Interventions in Time Series Foundation Models.*" *International Conference on Machine Learning (ICML 2025).* [PDF, Code]
4. **Goswami, Mononito**, Konrad Szafer*, Arjun Choudhry*, Yifu Cai, Shuo Li, and Artur Dubrawski. "*MOMENT: A Family of Open Time-series Foundation Models.*" *International Conference on Machine Learning (ICML 2024).* [PDF, Code, Pre-trained Model, Pre-training Dataset]
3. **Goswami, Mononito***, Vedant Sanil*, Arjun Choudhry, Arvind Srinivasan, Chalisa Udompanyawit, Artur Dubrawski. "*AQuA: A Benchmarking Tool for Label Quality Assessment.*" *Neural Information Processing Systems (NeurIPS 2023) Track on Datasets and Benchmarks.* [PDF, Code] (**Poster**)
2. **Goswami, Mononito**, Cristian Challu, Laurent Callot, Lenon Minorics, and Andrey Kan. "*Unsupervised Model Selection for Time-series Anomaly Detection.*" *International Conference of Learning Representations (ICLR 2022).* [PDF, Code] (**Spotlight**)
1. Mian, Shiven*, **Mononito Goswami***, and Jack Mostow. "*What's Most Broken? Design and Evaluation of a Tool to Guide Improvement of an Intelligent Tutor.*" International Conference on Artificial Intelligence in Education. Springer, Cham, 2019 [PDF]

Invited Talks

I have delivered 20+ invited talks on time series foundation models to leading industrial research teams (Morgan Stanley, Capital One, IBM, Amazon Science, Salesforce) and academic institutions, and regularly speak on graduate school preparation and career development.

Mentorship (at CMU)

I have mentored 8+ undergraduate and master's students who have successfully transitioned to prestigious academic programs (at CMU, Cornell, Georgia Tech, ETH Zurich and UPenn) and competitive industrial positions.

9. Nina Żukowska, *now* Master's student at FU Berlin
8. Michał Wiliński, *next* Robotics Ph.D. Student at CMU

7. Konrad Szafer, *now* Research Assistant at ETH Zurich
6. Arjun Choudhry, *next* Ph.D. Student at Georgia Tech
5. Yifu Cai, *now* Masters Student at CMU
4. Eric Enouen, *now* Ph.D. student at Cornell
3. Undergrad AI Mentoring Program
2. Chalisa Udompanyawit, *now* Embedded Software Engineer at Intuitive
1. Arnab Dey, *now* Medical School Student at UPenn

Achievements

- Secured USD **2.5+ million in research funding** through leading and contributing to successful grant proposals to the National Science Foundation (SCH: Multimodal Interactive Generalist Health AI (MAGENTA), ATD: Spatiotemporal Foundation Models for Multimodal Threat Detection at Scale), in collaboration iwht international labs (Exploratory Research Projects with CMU Portugal) and industrial labs (GE Vernova).
- Awarded for the best essay on *Goods & Services Tax*, its financial and technological implications, in the 2017 Indian Institute of Public Administration Essay Competition, by the *Vice President of India*.
- Secured second place among 500+ teams from colleges and startups across India in a National Payments Council of India (NCPI) Hackathon. Designed an intrusion detection architecture using fuzzy logic and keystroke dynamics.

Professional Service

Organization

- Co-organizing ICML 2025 Workshop on Foundation Models for Structured Data
- Co-chaired and co-organized the highly successful AAAI 2024 Spring Symposium on Clinical Foundation Models, attracting the highest attendance within the AAAI-2024 Spring Symposium Series.

Social Outreach

- Co-led the development of a course on Justice, Equity, Diversity and Inclusion in the Robotics Institute 2023
- As a member of the Robotics Institute Climate Committee, identified challenges in the experiences of various groups within RI and made policy recommendations to the Director to address them. 2021–2024
- Mentored two undergraduate students of an underrepresented groups interested in pursuing AI research, under the CMU AI Mentoring Program. 2020–2022
- Exposed our research on RoboTutor to primary stakeholders, some 8-10 year olds from Pittsburgh schools and obtained interesting feedback for comparative cognitive processes, as a part of the Gelfand Outreach program. July 2018

Languages

English (*native/bilingual proficiency*), Hindi, Bengali (*professional working proficiency*), French (*elementary proficiency*)

Hobbies

Cooking, Photography, Gardening, Chess