Atal Narayan Sahu

Incoming Graduate Student, UCLA

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EDUCATION

- **University of California, Los Angeles** *Sep 2025 – Sep 2026 (expected)*
  Incoming Master of Quantum Science & Technology student
- **King Abdullah University of Science and Technology, KSA** *Jan 2019 – Dec 2020*
  M.S. in Computer Science
- **Indian Institute of Technology, Kanpur** *Jul 2014 – June 2018*
  B.S. in Mathematics & Scientific Computing
  Minors in Algorithms and Machine Learning

EXPERIENCE

- **PrashantAdvait Foundation** *Apr 2024 – Apr 2025*
  Senior Software Engineer
  – Set up a scalable data warehouse for data-driven decisions.
  – Designed and implemented ranking algorithms for the Gita Feed.
- **Regology** *Sep 2021 – Mar 2024*
  Senior Data Scientist
  – Led Reggi, a RAG-based legal AI assistant built on in-house semantic search and LLMs.
  – Applied state-of-the-art NLP techniques on Regology's legal corpora.
- **King Abdullah University of Science and Technology** *Jan 2019 – Aug 2021*
  Graduate Research Assistant, SANDS Lab
  – Developed communication-efficient methods for large-scale distributed machine learning.
- **STARS, INRIA, Sophia Antipolis** *Jun 2020 – Aug 2020*
  Summer Research Intern, STARS Team
  – Explored weakly supervised methods for activity detection in videos. [Report]
- **King Abdullah University of Science and Technology** *May 2017 – Jul 2017*
  Summer Research Intern, Optimization and Machine Learning Lab
  – Researched asynchronous randomized methods for solving large linear systems.

RESEARCH INTERESTS

My current research interests lie in computational methods for scientific discovery. I aim to develop generative and physics-informed ML models and explore hybrid quantum-classical algorithms to tackle inverse design, property prediction, and synthesis planning in drug discovery, materials design, and quantum chemistry.

PUBLICATIONS

* denotes equal contribution

1. *REFL: Resource-Efficient Federated Learning.*
   Ahmed M. Abdelmoniem, **Atal Narayan Sahu**, Marco Canini, Suhaib A. Fahmy
   ACM EuroSys 2023 [Link]

2. *On the Convergence Analysis of Asynchronous SGD for Solving Consistent Linear Systems.*
   Atal Narayan Sahu, Aritra Dutta, Aashutosh Tiwari, Peter Richtárik
   Linear Algebra and its Applications (LAA) 2023 [Link]

3. *Natural Compression for Distributed Deep Learning.*
   Samuel Horváth, Chen-Yu Ho, Ludovít Horváth, **Atal Narayan Sahu**, Marco Canini, Peter Richtárik
   MSML 2022 [Link]

4. *Rethinking gradient sparsification as total error minimization.*
   Atal Narayan Sahu, Aritra Dutta, Ahmed M. Abdelmoniem, Trambak Banerjee, Marco Canini, Panos Kalnis
   NeuRIPS 2021 Spotlight presentation (Top 3%) [Link]

5. *Efficient Sparse Collective Communication and its application to Accelerate Distributed Deep Learning.*
   Jiawei Fei*, Chen-Yu Ho*, **Atal Narayan Sahu**, Marco Canini, Amedeo Sapio
   ACM SIGCOMM 2021 [Link]

6. *On the Discrepancy between the Theoretical Analysis and Practical Implementations of Compressed Communication for Distributed Deep Learning.*
   Aritra Dutta, El Houcine Bergou, Ahmed M. Abdelmoniem, Chen-Yu Ho, **Atal Narayan Sahu**, Marco Canini, Panos Kalnis
   AAAI 2020 [Link]

TECHNICAL SKILLS

- **Programming languages:** Python, Go, C, Julia, MATLAB, R, SQL
- **Software:** Docker, Git, MongoDB, Couchbase, Clickhouse, Elasticsearch, Solr
- **Machine Learning Packages:** PyTorch, TensorFlow, Keras, Langchain, Spacy

RELEVANT COURSES

- **Machine Learning & Optimization:** Introduction to Machine Learning, Combinatorial Machine Learning, Deep Learning for Computer Vision, Data Efficient Deep Learning, Computational Methods in Data Mining, Big Data Optimization.
- **Mathematics:** Linear Algebra, Real & Complex Analysis, Mathematical Logic, Multivariate Calculus & Differential Geometry, Theory of Computation, Measure Theory.
- **Probability & Statistics:** Applied Stochastic Processes, Statistical Inference, Elementary Probability Theory.
- **Algorithms:** Data Structures & Algorithms, Randomized Algorithms, Advanced Algorithms, Applications of Markov Chains in Combinatorial Optimization and Evolutionary Dynamics.
- **Physics:** Electrodynamics, Mechanics.

HONORS

- **KAUST graduate fellowship** awarded to KAUST MS students.
- **KVPY fellowship** (2015–2018) with **ALL INDIA RANK 9**, awarded by Dept. of Science & Technology, India for promoting research careers among promising students in sciences.
- **INSPIRE fellowship** (2014), awarded by Dept. of Science & Technology, India to meritorious students pursuing an undergraduate in sciences at premier institutes.
- **99.86 percentile** (among 1,500,000 candidates) in **JEE (Main)** 2014.
- **98.9 percentile** (among 150,000 screened candidates) in **IIT-JEE (Advanced)** 2014.

EXTRACURRICULAR ACTIVITIES

- **Winner** – Regology GenAI hackathon 2023.
- **Winner** – Design and Build Medical Devices at Winter Enrichment Program, 2020, KAUST.
- Represented Jabalpur Region, Table Tennis (U-17) in **KVS National Sports Meet** 2011–12.
- Secured **3rd position** in **KVS Regional Youth Parliament** 2012 acting as Deputy Speaker.