Atin Srivastava

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Education

Rutgers University — New Brunswick, NJ
Ph.D. in Computer Science; GPA: 4.0 — *Sep 2024 - May 2028*
M.S. in Computer Science; GPA: 3.9 — *Sep 2022 - May 2024*

Thapar Institute of Engineering and Technology — Patiala, India
B.E. in Computer Science; GPA: 3.8 (9.2/10.0) — *Aug 2016 - May 2020*
Thapar Merit Scholarship *2016-2020* - ranked in the Top 15 for 4 years

Skills Summary

Programming: **Python**, Java, C/C++, Matlab, Unix
AI/ML Technologies: **PyTorch**, **TensorFlow**, **Keras**, LAVA
Tools: **MLOps**, **Git**, REST, ROS, **Scikit Learn**, Docker, Kubernetes
Mathematics: Nonlinear Control & Dynamical Systems Theory, Linear Algebra, Calculus, ODEs, PDEs, Statistics, Probability

Publications

Srivastava, A., Michmizos, K. "**Astrocyte Induced Synthesis of Hierarchical Memories**", [*manuscript in progress*], 2025
RuCCS Colloquium "**Cognition in Sensory Cortex**", [*manuscript accepted*, **Academia Biology**], 2025
Srivastava, A., "**Excitatory-Inhibitory Recurrent SNN for Face Detection and Tracking by Robotic Oculomotor Head**", *Master's thesis, Rutgers University.* ProQuest link. 2024

Experience

Computational Brain Lab, Rutgers University — Piscataway, NJ
Doctoral Research Assistant — *Feb 2023 - Present*

- **Drive fundamental research** in **biologically-inspired AI and deep learning** to enhance the effectiveness of current **AI systems** by developing **neuron-astrocyte associative memory models** validated on CIFAR10 and ImageNet datasets.
- Developed an **Exitatory-Inhibitory Recurrent** Spiking Neural Network with 97% accuracy in associative memory tasks, leveraging **Intel's Loihi** and hippocampal structure insights for biologically accurate neuromorphic computing.
- Led the **development** and **optimization** of a Spiking Neural Network in **Python** and ROS for Robotic Head Control with an improvement of 27.3% in median relative error, culminating in an exhibit at the **Monmouth Museum**.
- Engineered an advanced **teacher-student-based** approach using **Transformer**-based models to classify hand movements from **direct EEG signals**.

Amdocs — Pune, India
Software Developer — *Sep 2020 - Aug 2022*

- Drove the transformation of critical system architectures, including the migration of a legacy credit check system to a **microservice-based architecture**, enhancing system efficiency and customer data validation accuracy.
- Orchestrated the overhaul of the Bill Formatter system from AmDD to Brite Bill, leading to a 37% improvement in billing accuracy and customer query resolution efficiency.
- Enhanced SOAP Web Services diagnostics and reduced troubleshooting time by 47% through the introduction of detailed fault sections in error responses.

Academic Projects

Neuron–Astrocyte Associative Memory for Composite & Hierarchical Recall
Computational Brain Lab (PI: Prof. K. Michmizos) — *Jan 2025 - Present*

- Designed and implemented an astrocyte-inspired modulatory Hopfield backbone with weight binning, enabling robust retrieval of correlated/composite memories
- stabilized co-active patterns and enabled composition at recall. *Impact:* fewer false recalls and higher composite top-1 across multiple seeds/datasets; supports k-shot composition with as few as 1–5 exemplars.

Spiking Oculomotor Network for Robotic Head Control
PI - Prof. K. Michmizos, IEEE Transactions on Medical Robotics and Bionics — *Sep 2023 - Mar 2024*

- Engineered a **Spiking Neural Network** (SNN) using Python and ROS, eliminating dependency on **Intel's Loihi** chip and replicating biological movements in oculomotor systems.
- Designed and executed an advanced robotic head control mechanism, boosting response time by 15% and movement accuracy by 18%, **surpassing** the original design specifications.

Neural Data Modeling + Evaluation Harness
Github - NeuroAI Lab Platform — *Dec 2025 - Jan 2026*

- Implemented a reproducible pipeline for neural time-series experiments: ingestion + schema validation, feature extraction, and event-aligned analysis.
- Trained baseline models with cross-validation + calibration; generated standardized metrics and visual reports for rapid iteration.