MEGHANA POTTA

COMPUTATIONAL NEUROSCIENCE

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EDUCATION [1]Converted to US GPA

MSc Neural Systems and Computation / ETH Zurich & UZH, Zurich, Switzerland   **2020 - 2022**

Focus:

Computational Neuroscience and Machine Learning (GPA[1]: 3.5)

Relevant Modules:

Computational Intelligence; Computational Vision; Reliable and Interpretable Artificial Intelligence; Computational Systems Biology; Learning in Biological Neural Networks; Introduction to Neuroinformatics

BTech Information Technology / National Institute of Technology, Surathkal, India   **2013 - 2017**

Focus:

Computer Science and Bioinformatics (GPA[1]: 3.8)

Relevant Modules:

Algorithms and Data Structures; Operating Systems; Databases; Computer Architecture; Linear Algebra, Probability Theory; Graph Theory; Machine Learning; Soft Computing

RESEARCH EXPERIENCE

RESEARCH ASSISTANT / BCS, Massachusetts Institute of Technology (MIT), USA   **June 2022 – Present**
- Supervised by Prof. Robert Yang, building a high-throughput pipeline for training different recurrent network models (RNN) to explain, predict, and control cognition on various tasks.
- Benchmarking model quality by quantifying similarity in trained models and experimental data via structural connectivity, representation geometry, and dynamic topology.

MASTER'S DISSERTATION / INI, ETH Zurich & University of Zurich, Switzerland   **May 2021 – May 2022**
- Supervised by Prof. Benjamin Grewe, investigated the biases of backpropagation-through-time (BPTT) for training recurrent neural networks (RNNs) in neuroscientific modeling for mechanistic circuit design.
- Leveraged concepts in Control Systems, Nonlinear Dynamical Systems, and Random Matrix Theory to characterize the quality of solutions produced by trained RNNs in approximating the ground-truth dynamics.

GRADUATE RESEARCHER / Neurotechnology Group, ETH Zurich, Switzerland   **February 2021 – April 2021**
- Supervised by Prof. Fatih Yanik, applied Immunohistochemistry protocols to rodent brain tissue to assess the recording quality of new ultra-flexible tungsten electrodes.
- Established an image analysis pipeline to quantify and characterize the host tissue immune response and blood-brain-barrier damage using Python and ImageJ.

BACHELOR'S DISSERTATION / National Institute of Technology Karnataka (NITK), India   **August 2016 – April 2017**
- Supervised by Prof. Dinesh Naik, modeled the traffic flow optimization problem as a Markov decision process and developed an autonomous control agent via deep Q-learning to assign speed limits.
- Our agent was recognized as a top viable solution by a Walmart Hackathon panel among 3000+ submissions.

PROFESSIONAL EXPERIENCE

ARTIDIS / NLP Data Scientist   **June 2021 – Present**
- Creating a new data-focused model, backed by NLP, to assist clinicians in providing patients with expedited breast cancer diagnosis personalized treatment plans.
- Built a scalable dockerized data-ingestion pipeline in Python and Azure, complete with MLOps, to analyze 100K+ medical reports across 500 patients.
- Created NLP pipelines, trained NER models, and fine-tuned transformers such as BioBERT.

MICROSOFT R&D / Software Development Engineer   **June 2017 – January 2020**
- Built SaaS business applications for Microsoft's Office 365 product via microservices, with a domain-driven web service layer interacting through Azure Service Bus message brokers and REST APIs.
- Built CI/CD and DevOps pipelines in Azure and completed deployments in public and hybrid clouds.
- Managed a QA team of four resources to deliver a suite of automation and integration test cases for our team-owned product features.

SKILLS

// DATA SCIENCE & SOFTWARE
Python – NumPy – SciPy – Matplotlib – PyTorch – NLP – Transformers
HTML & CSS – TypeScript – Angular JS – C – C++ – C# – .NET – SQL – NoSQL
REST – Microservices – Azure – Azure DevOps – Docker – Kubernetes – Shell

// THEORY
Machine Learning – Deep Learning – Biologically-plausible Learning & Plasticity Rules – Linear Algebra – Control Systems – Dynamical Systems and Chaos Theory – Random Matrix Theory

// EXPERIMENTAL
Extracellular Recordings – Signal processing – Immunohistochemistry – MATLAB – ImageJ/FIJI

CONFERENCE ABSTRACTS [1]*Equal contribution*

Cuevas, C.[1], **Potta, M.[1]**, Cloos, N., Li, M., Yang, R. (2022) Scaling up the evaluation of recurrent neural network models for cognitive neuroscience. *COSYNE 2023.* (Submitted)

Potta, M., Vilimelis Aceituno, P., Grewe, B. (2022) Biases of Backpropagation-through-time for training Recurrent Neural Networks in Neuroscientific Modelling. *Bernstein Conference.*

MANUSCRIPTS IN PREPARATION [2]*Joint senior authors*

Cloos, N., Li M., **Potta, M.**, Cuevas, C.[2], Yang, R.[2] (2022) Scaling up the evaluation of recurrent neural network models for cognitive neuroscience.

TALKS & POSTERS

Poster / Corticon Symposium: From Cortical Microcircuits to Consciousness   **April 2022**
Talk / 6th HBP Student Conference on Interdisciplinary Brain Research   **February 2022**

HONORS & AWARDS

Huawei Merit Scholarship   **2017**
Government of India Ekalavya Fellowship   **2015**
Indian Academy of Science Summer Research Fellow (IAS SRF)   **2015**

SERVICE

Women Techmakers Ambassadors / Google   **August 2022 - Present**
Empowering tech communities via outreach and education.

Coding Instructor / TechSpark Academy & Girls Can Code, Switzerland   **August 2020 - August 2022**
Teach students computer science, python programming, and app development.

Student Mentor / ETH Zurich & University of Zurich, Zurich, Switzerland   **August 2020 - August 2022**
Responsible for liaising with the university to represent our student cohort.