Shweta Prasad

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Education

- **IMPRS MMFD, University of Tübingen** — Tübingen, Germany
  Integrated M.Sc/Ph.D Programme in Neural and Behavioural Sciences — *Oct. 2022 –*
- **Ashoka University** — Sonipat, India
  PG Diploma in Advanced Studies and Research in Computer Science; CGPA 3.44/4.0 — *Aug. 2021 – May 2022*
- **Neuromatch Academy** — Los Angeles, USA
  Interactive Track, Computational Neuroscience Summer School — *Aug. 2020*
- **Ashoka University** — Sonipat, India
  Bachelor of Science in Computer Science with a Minor in Biology; CGPA: 3.58/4.0 — *Aug. 2018 – May 2021*

Tools and Frameworks

- **Programming Languages:** Python, MATLAB, C, C++, R, Apps Script
- **Frameworks:** PyTorch, TensorFlow for Machine Learning; C#/.NET for Windows app development.
- **Other Tools**: GitHub, Selenium, Excel/G-Sheets, LaTeX, GIMP.

Research Experience

- **Decision making in crows, Nieder Lab, Inst. Neurobiology** — Tübingen, Germany
  Lab-rotation & Master Thesis Student, Supervised by Prof. Dr. Andreas Nieder — *Nov. 2023 -*
  - Employing random dot-motion discrimination to explore behavioral aspects of perceptual decision making in crows
- **Serotonin in patience, Dayan Lab, MPI-BC** — Tübingen, Germany
  Lab-rotation Student, Supervised by Dr. Kevin Lloyd — *Sep. 2023 - Nov. 2023*
  - Evaluating an average reward RL model of how Serotonin may be modulating patience in interval timing tasks
- **Pulse protocols for DPOAEs, Gummer Lab, Tübingen Hearing Research Center** — Tübingen, Germany
  Research Intern, Supervised by Dr. Ernst Dalhoff — *Jun. 2023 - Jul. 2023*
  - Testing efficacy of novel two-pulse protocols for distortion product otoacoustic emissions as a diagnostic tool for cochlear amplifier functionality
- **Single Molecule Biophysics, Haldar Lab, Ashoka University** — Sonipat, India
  Software Development Intern, Supervised by Dr. Debayan Gupta & Dr. Shubhasis Haldar — *Dec. 2019 - May 2022*
  - Building and improving covalent magnetic tweezers and associated software(s) for week-long single molecule force-clamp experiments.
  - Learnt protein extraction and purification methods over Summer, 2020.
- **Neuroethology Lab, Ashoka University** — Sonipat, India
  Undergraduate Research Assistant to Dr. Bittu K Rajaraman — *Sep. 2018 - May 2022*
  - Studying call pattern generation and production in *Orthopterans* using a mixture of simulations, electrophysiological and behavioral exploration, to develop circuit models.
  - Assisting senior graduate students in conducting and designing behavioral assays.
  - Experienced in field work and animal maintenance.
  - Created a spike-sorting pipeline using SpikeInterface for two-channel neural data from electrophysiological explorations on bushcrickets.

Work Experience and Internships

- **Alumni Relations Office, Ashoka University** — Sonipat, India
  Website & Database Administrator — *Mar. 2021 – Jan. 2022*
  - Manager of alumni databases and the alumni web portal, with 1500+ active users.
  - Supervised interns over summer 2021 to clean data and expand existing database by scraping 980+ LinkedIn profiles to collect and organize data on all existing alumni into the largest, most comprehensive database in the history of the university.

- **The Neuroscience Outreach Network** — Princeton, NJ, USA
  Community Outreach & Content Coordinator — *Aug. 2020 – Jan. 2021*
  - Project aimed at enabling access to education in neuroscience to students in underserved communities around the world.
  - Tailored virtual/classroom lessons and material for individual grade levels.

- **DiverseNeuro.org** — Multiple locations, India
  Student Researcher — *Jun. 2020*
  - A collaborative research venture between IISER Pune and Ashoka University
  - Study on the international academic demographic in neuroscience, aimed at informing inclusive policy-making in academia.

Projects

- **Modeling Forest Fires (Winter 2022):** Replicated findings in Malamud et.al, 1998 using a 2-D cellular automaton model of forest fire dynamics
- **Capstone Project - Incorporation of Deep Probabilistic Models into Data Compression (Monsoon 2021):** Project under the supervision of Dr. Mahavir Jhawar and Dr. Subhashish Banerjee, on methods to incorporate deep latent variable models into source coding for image and video data compression; special focus on Asymmetrical Numeral Systems; implemented the t-ANS codec from scratch in Python.
- **Classifier Rules for the Majority Problem (Spring 2021):** Simulated all elementary automata, studied its statistical mechanics and applications in solving the majority problem (a density classification task), both theoretically and as a proposed model to explain the less understood phenomenon of stomatal patchiness.
- **Efficient Face-Mask Detection for Syndromic Surveillance (Monsoon 2020):** Built an efficient face-mask detection tool suitable for cheap computation such as on mobile phones, webcams or CCTV cameras, so as to allow for real-time feedback into disease dynamics models.
- **Prediction of Erroneous Decision Making (Summer 2020):** Decoded neural data from Steinmetz, et. al, 2019, to predict erroneous decision making in trained mice. Used a GLM to predict whether the performance of trained mice that performed well in an 2-AUC experimental paradigm was affected by previous erroneous decisions. Project mentor: Dr. Adrien Peyrache, McGill University.
- **Modelling Call Pattern Generation in Bushcrickets (Spring 2019):** Exploratory project on call pattern generation in crickets and mechanistic models of neurons, particularly the Morris-Lecar 2-neuron model.

Teaching

- **Graduate Teaching Assistant**
  University of Tübingen
  - **Neurobiology Practical** (Winter 2023), Dr. Stephanie Westendorff; Class size: 25; Tasks: Assisting 3rd year students of B.Sc Neurobiology conduct electrophysiological exploration of ground cricket auditory responses.
  - **Sensory Systems - I: The Auditory and Vestibular Systems** (Winter 2023), Class Size: 30; Tasks: holding bi-weekly tutorials for masters students of the Graduate Training Center for Neuroscience.

- **Undergraduate Teaching Assistant**
  Dept. of Computer Science, Ashoka Universtiy

- **Theory of Computation** (Spring 2022), Dr. Soumyottam Chatterjee; Class size: 25; Student Feedback : 4.5/5; Tasks: holding weekly office hours, setting and grading all assignments.
- **Introduction to Machine Learning** (Monsoon 2021), Dr. Subhashish Banerjee; Class size: 68; Student Feedback: 4.43/5; Tasks: holding weekly office hours, setting and grading all assignments, facilitating data collection for Ashoka's Faces Dataset .
- **Algorithms Design and Analysis** (Spring 2020), Dr. Subhash Bhalla; Class Size: 70; Student Feedback: 4.46/5; Tasks: holding weekly office hours, setting and grading all assignments.

- **Teaching Assistant**
  Summer School, Neuromatch Academy (Online)
  - **Deep Learning Course** (Summer 2021), Content by various professors from around the globe; Led 7-14 international UGs and Ph.Ds selected to participate in the *Interactive Track* of the programme; Led daily discussion sessions, taught deep learning tools from ground up on PyTorch, provided support to complete projects.

Awards and Scholarships

- Best Student Presentation, Lab Rotation Seminar, GTC of Neuroscience, University of Tübingen
- Fully funded M.Sc in Neural and Behavioural Sciences, MPI for Biological Cybernetics
- 100% Scholarship on Tuition and Residence, Ashoka University
- Merit Award for *Enriching Campus Culture* in 2019, as President of Vistaar, Ashoka University
- Merit Award for *Enriching Campus Culture* in 2018, as a columnist for Kalinga Magazine, Ashoka University

Leadership and Extra-Curriculars

- **Student Representative, IMPRS MMFD**
  University of Tuebingen *March. 2023 –*
- **Mentor, Ashoka University Women in STEM**
  Independent, Alumni-run *Oct. 2022 –*
  - Mentoring women and non-binary folk interested in pursuing research careers in STEM.
- **Advisor, Women in Computing Society**
  Ashoka Universtiy *Sep. 2021 – Jan. 2022*
  - Head, *WiCS Workshop Weekends*; Member since 2018.
  - Led 2 *WiCS Annual Cryptic Hunts*, our flagship event.
- **Student Representative, Dept. of Computer Science**
  Academic Advisory Board, Ashoka Universtiy *Sep. 2020 – May 2021*
  - Selected by the Head of Department, Dept. of Computer Science.
  - Served as primary coordinator for all student–department communication.