# Shweta Prasad

https://shw3ta.github.io

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GitHub: github.com/shw3ta/


## Education

- **IMPRS MMFD, University of Tübingen** — Tübingen, Germany
  *Integrated M.Sc/Ph.D Programme in Neural and Behavioural Sciences; CGPA 1.68* — *Oct. 2022 – Oct. 2024*
- **Ashoka University** — Sonipat, India
  *PG Diploma in Advanced Studies and Research in Computer Science; CGPA 3.44/4.0* — *Aug. 2021 – May 2022*
- **Ashoka University** — Sonipat, India
  *Bachelor of Science in Computer Science with a Minor in Biology; CGPA: 3.58/4.0* — *Aug. 2018 – May 2021*

## 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
- Full scholarship (Tuition and Residence) Ashoka University

## Tools and Frameworks

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

## Research Experience

- **Waveform feature analysis, Hafed Lab, Center for Integrative Neuroscience** — Tübingen, Germany
  *Research Intern, Supervised by Prof. Dr. Ziad Hafed* — *Jul. 2024 –*
  - Identification of functionally different neuron types from action potential waveforms in the rhesus macaque superior colliculus (SC) and primary visual cortex (V1)
  - Automated data curation pipeline & collated a large dataset of SC and V1 neurons
- **Decision making in crows, Nieder Lab, Inst. Neurobiology** — Tübingen, Germany
  *Lab-rotation & Master Thesis Student, Supervised by Prof. Dr. Andreas Nieder* — *Nov. 2023 – Oct. 2024*
  - Master thesis: Waiting time as a behavioural correlate for decision confidence in a carrion crow (Grade: 1.3)
  - Lab rotation: Behavioural aspects of perceptual decision making in carrion crows
- **Serotonin in patience, Dayan Lab, MPI for Biological Cybernetics** — Tübingen, Germany
  *Lab-rotation Student, Supervised by Dr. Kevin Lloyd* — *Sep. 2023 – Nov. 2023*
  - Evaluated an average reward RL model of how Serotonin may be modulating patience in interval timing tasks
- **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*
  - Studied call pattern generation and song production in *Orthopterans* using a mixture of simulations, electrophysiological and behavioral exploration, to develop circuit models
  - Gained experience in field work and animal maintenance

## 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 of 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 project support

## Leadership and Extra-Curriculars

- **Student Representative, IMPRS MMFD**
  *University of Tuebingen* *Mar. 2023 – Mar. 2024*
- **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

## Workshops, Conferences, Symposia

- **Gordon Research Conference on Eye Movements (2025)** Poster – *Classifying extracellular action potential waveform shapes in the rhesus macaque superior colliculus and primary visual cortex*
- **Animal Tracking Workshop (2025)** Organizer, workshop held on 13 & 14 Feb., 2025; Collaboration between the IMPRS MMFD and the *Center for the Advanced Study of Collective Behaviour* (CASCB)
- **Rewilding Ethology (2024)** Workshop at the Max Planck Institute for Animal Behaviour, Konstanz, Germany (fully funded to attend by the CASCB)
- **Systems Neuroscience Symposium (2023, 2024)** Symposia at UKT Tübingen, Germany
- **No Garland Neuroscience (2020)** Conference at IISER Pune, India

## Other Relevant 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

## Other Work Experience

- **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 most comprehensive database in university history
- **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