Mrugank Dake

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New York, NY

EDUCATION

New York University New York, NY
PhD in Computational Cognitive Neuroscience **Expected Graduation: May 2026**
MPhil in Experimental Psychology **Graduated: May 2025**
GPA: 3.95/4.0
Relevant Coursework: Math Tools for Cognitive & Neural Science, Psychophysics, Data Science, Computational Neuroscience

Indian Institute of Science Education & Research (IISER) Tirupati, India
BS-MS Dual Degree (Biology & minor in Physics) **Graduated: August 2021**
CGPA: 8.2/10.0
Relevant Coursework: Nonlinear Dynamics & Chaos, Linear Algebra (I & II), Calculus (Univariate and Multivariate), Statistical Thermodynamics, Data Science

RESEARCH EXPERIENCE

Clayspace Lab, New York University **September 2021 - Present**
Doctoral Researcher, Supervisor: Dr. Clayton Curtis

- High-Performance Computing: Optimized population receptive field (pRF) mapping for fMRI data by implementing parallel processing across CPUs and GPUs (CUDA) to resolve computational bottlenecks.
- Multimodal Data Fusion: Lead end-to-end pipelines for high-dimensional datasets including human behavior, eye-tracking, and neural signals (fMRI, MEG, ECoG, EEG).
- Neural Simulations: Developed complex electric field simulations (SimNIBS) and utilized TMS to model distributed neural representations and their causal role in working memory.
- Academic Impact: Lead author of a manuscript published in *Nature Communications*; currently spearheading five additional projects targeting top-tier journals and conferences; active peer-reviewer for CogSci and eLife
- Scientific Communication: Presented research at Stanford, Dartmouth, and international conferences (SfN, CCN) to translate complex neural modeling for both technical and non-technical audiences.

Sciurid Lab, IISER Tirupati **May 2020 - August 2021**
Masters Thesis, Supervisor: Dr. Nandani Rajamani

- Acoustic Deep Learning: Developed and evaluated CNNs and template-matching classification models to automate the detection of rare species vocalizations in noisy rainforest environments.
- Citizen Science & Big Data: Managed a national-scale project involving the ingestion, annotation, and analysis of large-scale acoustic datasets using Python and R.
- Statistical Modeling: Conducted rigorous hypothesis testing and feature extraction on passive acoustic data, resulting in a completed thesis and two manuscripts in preparation.

iGEM Team Lead, IISER Tirupati **November 2017 – November 2019**

- Technical Leadership: Directed a multidisciplinary team of 17 researchers to engineer "*CoCa coli*," a probiotic immunotherapy for targeted colon cancer detection, earning a Gold Medal at the Giant Jamboree in Boston (top-tier of 300+ teams).
- Project Execution: Secured INR 1million ($12,000 USD) in research funding via the Indian Biological Engineering Competition (iBEC) to support end-to-end genetic circuit design and in-vitro validation.
- Operational Management: Managed international logistics and cross-functional coordination, applying first-principles biological engineering to deliver a validated scientific product on a global stage.

WORK EXPERIENCE

Product Data Science Intern, Meta Reality Labs **May 2025 - August 2025**

- Investigated hand usage patterns across the Quest ecosystem using Presto and Spark, querying massive datasets to identify friction points and drive core product insights.
- Developed Machine Learning models in Python to isolate demographic and behavioral factors contributing to user drop-off, leading to targeted UX recommendations for Quest applications.
- Applied Graph Theory approaches to quantify the influence of social networks on Mixed Reality (MR) adoption and long-term hand-tracking retention.
- Collaborated with cross-functional (XFN) partners to refine topline metrics, leveraging data-driven findings to influence the product roadmap for next-generation hardware.
- Actively tested and provided feedback on state-of-the-art VR/MR prototypes, ensuring internal quality standards and alignment with user-centric data trends.

Graduate Teaching Assistant, New York University **January 2023 - December 2025**
Courses: Introduction to Scientic Programming (Graduate), EEG/MEG/iEEG Methods (Graduate), Introduction to Cognitive Neuroscience (Undergraduate), Math Tools 3: Linear Systems & Fourier Transforms (Graduate)

- Led discussions and tutorials for 150+ students, translating complex topics in linear algebra, signal processing, and Fourier transforms into digestible insights.
- Engineered coding assignments and interactive tutorials in Python and MATLAB, focusing on real-world applications of scientific programming and data analysis.
- Developed custom animations to visually demonstrate abstract mathematical concepts, significantly improving student comprehension of linear systems and multidimensional data.
- Managed end-to-end grading workflows for technical assignments and research papers, ensuring rigorous academic standards and providing constructive feedback on experimental design.

VOLUNTEER WORK

Website Coordinator, ClimateMatch Academy **February 2023 - July 2023**

- Cross-Institutional Collaboration: Engineered and maintained the official website for the ClimateMatch curriculum in partnership with Neuromatch Academy, streamlining content delivery for global participants.

Cognition & Perception Open House Student Organizer, New York University **September 2022 - June 2023**

- Strategic Event Leadership: Elected by the student body to spearhead recruitment events for the incoming 2023 PhD cohort, managing logistics for 40+ international candidates.
- Operational Logistics: Orchestrated end-to-end event planning, including travel, accommodation, and interview scheduling, ensuring a seamless experience for faculty and prospective students.

SKILLS

Programming: Advanced: Python (NumPy, Pandas, PySpark), MATLAB, R; Intermediate: SQL (Presto, SparkSQL), LaTeX, HTML; Basic: CSS, JavaScript, CUDA
Data Science & ML: TensorFlow, Keras, PyTorch, scikit-learn, Graph Theory, Time-series Analysis, CNNs, Generative Modeling
Neuroimaging & Tools: MNE-Python, fMRIprep, SimNIBS, Psychtoolbox, EEG, MEG, ECoG, fMRI, TMS, Signal Processing
Infrastructure & Design: Git, GitHub, Linux/Unix, Parallel Computing, Adobe Illustrator, Photoshop
Languages: English (Fluent), Marathi (Native), Hindi (Native), German (Intermediate), Spanish (Intermediate)