Yash MEHTA

Research Engineer 2 | HHMI Janelia Research Campus

linkedin.com/in/yashsmehta github.com/yashsmehta Google Scholar Profile
@ yashsmehta95@gmail.com
19700 Helix Dr, Ashburn, USA
Born : Dec 1995 (26 years), India

My research interests lie at the intersection of deep learning and neuroscience, specifically, uncovering fundamental principles of learning in the brain. At Janelia, I am working on learning-to-learn synaptic plasticity rules to train deep neural networks with **James Fitzgerald** and **Jan Funke**. I was very fortunate to get the opportunity of working with some amazing scientists along the way. I have worked on efficient algorithms for evolving optimal neural network architectures in **Frank Hutter**'s AutoML lab in Freiburg. Before that, I was working on perturbation-based learning algorithms to train deep neural networks as candidates for credit assignment in the brain with **Peter Latham** (Gatsby) and **Tim Lillicrap** (DeepMind). I've also worked on deep learning-based personality detection from text with **Erik Cambria** (NTU Singapore) during my bachelor's thesis.
I thoroughly enjoy coding and working on hard algorithmic problems.

Research Experience

Present – January 2022 | **HHMI Janelia Research Campus, USA,** Research Engineer 2
SUPERVISORS : Jan Funke, James Fitzgerald
- Working on meta-learning synaptic plasticity rules in a connectome-constraint artificial neural network in collaboration with **Larry Abbott**'s lab at the Zuckerman Institute.
- Working closely with experimental labs to fit our model to actual fly neuronal recording data.

JAX | Bio-plausible Learning | Neural Networks | Connectomics

December 2021 – September 2020 | **AutoML Lab Freiburg, Germany,** Research Engineer
SUPERVISOR : Frank Hutter
- Worked on developing and benchmarking efficient algorithms for evolving optimal neural network architectures for various computer vision tasks.
- Lead developer of open-source library, *NASLib* for fundamental neural architecture search research.

PyTorch | Neural Architecture Search | Neural Networks

June 2020 – January 2019 | **Gatsby Computational Neuroscience Unit, UK,** Research Technician
SUPERVISORS : Peter Latham, Tim Lillicrap
- *Main Project* : worked on perturbation-based learning rules as candidates for credit assignment in the brain, by investigating their performance on artificial neural networks.
- *Side Project* : Worked on improving the performance of biologically-plausible convolutional networks with a combination of backprop and local Hebbian plasticity.

JAX | Bio-plausible Learning | Neural Networks

Publications

Erdos Number : 3

Meta-Learning Synaptic Plasticity Rules with Neural Network Observables 2022
Yash Mehta, Dan Tyulmankov, Yoshi Aso, Glenn Turner, Larry Abbott, James Fitzgerald, Jan Funke
(*Under Review*) Cosyne Abstract

On the Limitations of Perturbation-Based Methods For Training Deep Networks 2022
Yash Mehta, Naoki Hiratani, Peter Humphreys, Peter Latham, Timothy Lillicrap
In Preparation | Preview

Stability and Scaling of Node Perturbation Learning 2022
Naoki Hiratani, Yash Mehta, Timothy Lillicrap, Peter Latham
Neural Information Processing Systems (**NeurIPS**) | Paper

NAS-Bench-Suite : NAS Evaluation is (Now) Surprisingly Easy 2022
Yash Mehta*, Colin White*, Arber Zela, Arjun Krishnakumar, Guri Zabergja, Shakiba Moradian, Mahmoud Safari, Frank Hutter
International Conference on Learning Representations (**ICLR**) | Paper

Towards Biologically Plausible Convolutional Networks 2021
Roman Pogodin, Yash Mehta, Timothy Lillicrap, Peter Latham
Neural Information Processing Systems (**NeurIPS**) | Paper

Multi-Task Learning for Emotion and Personality Detection 2021
Yang Li, Amir Kazameini, Yash Mehta, Erik Cambria
Neurocomputing | Impact Factor : 5.72 | Paper

Up and Down : Modelling Personality with Psycholinguistic Features and Language Models 2020
Yash Mehta*, Samin Fatehi*, Amir Kazameini, Clemens Stachl, Erik Cambria
IEEE International Conference of Data Mining (ICDM) | Paper

Recent Trends in Deep Learning-Based Personality Detection 2019
Yash Mehta, Navonil Majumder, Alexander Gelbukh, Erik Cambria
Artificial Intelligence Review | Impact Factor : 9.58 | 5,000+ Accesses | Paper

Education

2014 - 2018 **Birla Institute of Technology and Science (BITS Pilani)**, India
Computer Science, Bachelor of Engineering (Honors)

- *Relevant Coursework* : Parallel Computing, Theory of Computation, Information Retrieval, Data Structures and Algorithms, Advanced Algorithms.
- Varsity squash team captain and Varsity badminton team vice-captain.

Jan'18 - Jul'18 **Nanyang Technology University (NTU),** Singapore
Applied Deep Learning, Undergraduate Research Thesis

- Worked on automated personality prediction from written essays using pre-trained Large Language Models (LLMs), for e.g. BERT, RoBERTa.
- Wrote a literature survey on methods for personality prediction using Deep Learning.
- Completed the Deep Learning Coursera online specialization by Andrew Ng.

Industry Experience

December 2018 – July 2018 **Amazon, India,** Software Development Engineer

- Worked as a full-time software developer as part of the Amazon Prime Music team using the AWS technology stack.
- Won **second prize** in the Global Amazon ML Hackathon, leading a team of 6 software developers. Created a prototype for automated emotion detection from songs using LSTMs.
- Quit job to pursue research in Deep Learning and Neuroscience.

AWS | Data Pipelines | Software Development

Past Editorial Board Membership

Managing Guest Editor - Special Issue

Future-Generation Personality Prediction from Digital Footprints

FGCS | Elsevier International Journal | Impact Factor : 7.31

Organized a successful special issue in the Elsevier international journal, Future Generation Computing Systems (FGCS) on automated personality prediction with Deep Learning. The other guest editors in the team were **Prof Bjorn Schuller** (Imperial College), **Prof Clemens Stachl** (Uni St.Gallen), **Prof Joeseph T Yun** (UIUC) and **Prof Konstantin Markov** (Uni Aizu).

Teaching Assistant

- **Deep Learning** (WS'21), MSc.Course, Freiburg
- **Deep Learning Lab** (SS'21), MSc.Course, Freiburg
- **Intro to NLP** (SS'18), BSc.Course, NTU Singapore
- **Advanced Algorithms** (SS'17), Bsc.Course, BITS
- **Data Structures & Algo** (WS'17), Bsc.Course, BITS

Interests

- **Teaching** : Took intro ML classes @local high school
- **Videography** : Created "Life in Science" video interview series
- **Solo travel** : Backpacked the Himalayas, Europe and Eastern Australia
- **Running** : Half marathon personal best : 1h 46m

References

Peter Latham
Professor, Gatsby, UCL
@ pl@gatsby.ucl.ac.uk

James Fitzgerald
Group Leader, Janelia
@ james@janelia.hhmi.org

Timothy Lillicrap
Sr. Staff Research Scientist, DeepMind
@ tim.lily@google.com

Jan Funke
Group Leader, Janelia
@ funkey@janelia.hhmi.org

Frank Hutter
Professor, Universität Freiburg
@ frank@uni-freiburg.de

Erik Cambria
Assoc. Professor, NTU Singapore
@ erik@ntu.edu.sg