

# Yash MEHTA

## PhD student | Computational Cognitive Science

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## EDUCATION

- Sept'23 - Present** | **Johns Hopkins University, USA**  
Cognitive neuroscience, Deep learning, PhD  
‣ Supervised by **Mick Bonner**, working on representations in the brain, and deep neural networks.
- Jan'18 - Jul'18** | **Nanyang Technological 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.
- Aug'14 - Jul'18** | **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.

## RESEARCH EXPERIENCE

- Present**  
**October 2023** | **DBMI, Harvard Medical School, USA, Research Fellow**  
SUPERVISOR : **Pranav Rajpurkar**  
‣ Building knowledge graphs for radiology headCT free text reports from MIMIC for comprehensive radiology report generation.  
‣ Combining LLMs, Retrieval Augmented Generation, knowledge graphs and vector databases.  
[Langchain](#) [Knowledge Graphs](#) [LLMs](#)
- Sept 2023**  
**January 2022** | **HHMI Janelia Research Campus, USA, Research Engineer 2**  
SUPERVISOR : **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, Columbia.  
‣ Working closely with experimental labs to fit our model to actual fly data.  
[JAX](#) [Meta-learning](#) [Neural Networks](#)
- 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](#) [Transformers](#)
- July 2020**  
**January 2019** | **Gatsby Computational Neuroscience Unit, UK, Research Intern**  
SUPERVISORS : **Peter Latham, Tim Lillicrap (Google DeepMind)**  
‣ *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

### MODEL-BASED INFERENCE OF SYNAPTIC PLASTICITY RULES FROM NEURAL ACTIVITY

2023

[Yash Mehta](#), [Danil Tyulmankov](#), [Yoshi Aso](#), [Glenn Turner](#), [James Fitzgerald](#), [Jan Funke](#)

[under review](#)  [Paper](#)

**AN EMPIRICAL INVESTIGATION OF PERTURBATION-BASED METHODS TO TRAIN DEEP NEURAL NETWORKS** 2023  
 Yash Mehta, Naoki Hiratani, Peter Humphreys, Peter Latham, Timothy Lillicrap  
 Under review [GitHub](#)

**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](#)

**STABILITY AND SCALING OF NODE PERTURBATION LEARNING** 2022  
 Naoki Hiratani, Yash Mehta, Timothy Lillicrap, Peter Latham  
 Neural Information Processing Systems (NeurIPS) [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** 2020  
 Yash Mehta, Navonil Majumder, Alexander Gelbukh, Erik Cambria  
 AI Review Journal | Impact Factor : 12.0 | 8,500+ Accesses [Paper](#)

## 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 academic research.

[AWS](#) | [Data Pipelines](#) | [Software Development](#)

## EDITORIAL BOARD MEMBERSHIPS

### MANAGING GUEST EDITOR - SPECIAL ISSUE 2022

[Future-Generation Personality Prediction from Digital Footprints](#)

#2 in Computing Systems | CiteScore : 21.1 | Impact Factor : 7.5

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 Joeseoph 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 "ResearchBridge" video interview series
- > **Solo travel** : Backpacked the Himalayas, Europe and Eastern Australia
- > **Running** : Half marathon personal best : 1h 46m

## REFERENCES

Pranav Rajpurkar

Asst. Professor, HARVARD

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James Fitzgerald

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Peter Latham

Professor, GATSBY, UCL

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Frank Hutter

Professor, UNIVERSITÄT FREIBURG

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Timothy Lillicrap

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