

# Ajay Subramanian

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## EDUCATION

<b>Ph.D.:</b>	<b>New York University, USA</b> Cognition & Perception, Department of Psychology Advisor: Denis Pelli	2021 - 2026
<b>B.E.:</b>	<b>Birla Institute of Technology and Science Pilani, India</b> Electronics and Communication Engineering	2017 - 2021

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## RESEARCH AND WORK EXPERIENCE

### **2021 - present: New York University**

Graduate Student Researcher. Supervisors: Denis Pelli  
*Neural-network models of the speed-accuracy tradeoff in human object recognition.*

### **2020 - 2021: Harvard University & Massachusetts Institute of Technology**

Research Intern. Supervisors: Samuel Gershman, Pedro Tsividis  
*Human-level reinforcement learning through theory-based modeling, exploration and planning.*

### **2020: Center for Computational Brain Research (CCBR), Indian Institute of Technology Madras**

Senior Thesis. Supervisor: Partha Mitra, Jaikishan Jayakumar  
*Automated detection of neuroanatomical features in gigapixel histological images using deep learning.*

### **2019 - 2020: Cognitive Neuroscience Lab, BITS Pilani**

Undergraduate Researcher. Supervisor: Veeky Baths  
*Deep learning for visual reconstruction from spoken word representations;*  
*Review on reinforcement learning and its connections with neuroscience and psychology.*

### **2019: Biologically Inspired Neural Network (BINN) Labs, BITS Pilani**

Undergraduate Researcher. Supervisor: Basabhatta Sen Bhattacharya  
*Simulating LGN response to background irradiance using spiking neural networks on SpiNNaker.*

### **2019: GeNN Team, University of Sussex & International Neuroinformatics Coordinating Facility (INCF)**

Google Summer of Code Intern. Supervisors: James Knight, Thomas Nowotny  
*Deep learning in spiking neural networks using GPU-enabled neural networks (GeNN).*

### **2019: LetsTransport**

Summer Intern. Supervisor: Nilay Sahu  
*Optimizing database querying and file upload speeds from a native Android application.*

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## PUBLICATIONS & PREPRINTS

### **PREPRINTS**

1. **Subramanian, A.**, Price, S., Sizikova, E., Kumbhar, O., Majaj, N. J., Pelli, D. G. (2022). SATBench: Benchmarking the speed-accuracy tradeoff in object recognition by humans and dynamic neural networks. *arXiv*.

### **PUBLICATIONS**

2. Turner, J. P., Knight, J. C., **Subramanian, A.**, & Nowotny, T. (2022). mlGeNN: accelerating SNN inference using GPU-enabled neural networks. *Neuromorphic Computing and Engineering*, 2(2), 024002.
3. **Subramanian, A.**, Chitlangia, S., & Baths, V. (2022). Reinforcement learning and its connections with neuroscience and psychology. *Neural Networks*, 145, 271-287.

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## POSTER PRESENTATIONS

1. **Subramanian, A.**, Price, S., Sizikova, E., Kumbhar, O., Majaj, N., Pelli, D. G. (2022). Benchmarking dynamic neural-network models of the human speed-accuracy tradeoff. *Vision Science Society (VSS) Meeting*, St. Pete Beach, USA.
  2. **Subramanian, A.**, Patil, R., Baths, V. (2019). Word2Brain2Image. Visual Reconstruction from Spoken Word Representations. *Annual Conference of the Association for Cognitive Science in India (ACCS)*, Goa, India.
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## TALKS

1. **Subramanian, A.** (2020). Word2Brain2Image: A data-driven approach towards understanding representations in the brain. *Round table track: Data issues in Cognitive Neuroscience*, International CCCP Symposium. Virtual.
  2. **Subramanian, A.** (2019). Open Source Development and Google Summer of Code. *Technology Incubator Programme Seminar*, BITS Pilani, Goa, India.
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## AWARDS

**2021:** MacCracken Fellowship for doctoral studies, New York University.  
**2019:** Matic Bounty Prize, InOut Hackathon, Bangalore, India.  
**2018:** Literacy and Cognition Project research award, Max Planck Institute for Psycholinguistics.  
**2015:** National Talent Search Scholarship, Government of India.

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## TEACHING AND OPEN-SOURCE

**2020:** **Co-creator**, [GenRL](#)  
*Open-source library for reproducible, generalizable reinforcement learning*  
**2019:** **Project Mentor**, *Learning to play games with deep reinforcement learning*  
Technology Incubator Programme, BITS Pilani Goa, India  
**2018:** **Course Instructor**, *Deep Learning*  
Technology Incubator Programme, BITS Pilani Goa, India  
**2018:** **Teaching Assistant**, *Computer Programming (CS F111)*  
BITS Pilani, Goa, India

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## ACADEMIC SERVICE

**2022:** Reviewer, NeurIPS Datasets and Benchmarks Track  
External Reviewer, ECML-PKDD  
**2020:** Co-organizer, Summer Symposium on AI Research (SAiDL and APPCAIR, BITS Pilani Goa)

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## MEMBERSHIP

**2021 - present** Member, Vision Science Society  
**2018 - present** Core Member, Society for Artificial Intelligence and Deep Learning (SAiDL)  
**2017 - 2021** Member, BITS Pilani Goa Tennis Team  
**2013 - 2017** Captain, National Public School Tennis Team  
Captain, National Public School Table Tennis Team

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## TECHNICAL SKILLS

**Programming:** Python, C++, Java, C, MATLAB  
**Frameworks:** PyTorch, TensorFlow, Keras, Flask  
**Tools:** GCP, Travis CI, Docker, Slurm, LaTeX, Git, DialogFlow, Android Studio, MongoDB  
**Operating Systems:** Mac OS, Linux, Windows

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## OTHER EDUCATION

**Summer courses:** Google Research India AI Summer School - Computer Vision track (2020)  
Reinforcement Learning, Indian Institute of Technology Madras (2018)

**Online courses:** Machine Learning (Stanford, Coursera)  
Deep Learning for Computer Vision (Stanford)  
Deep Learning Specialization (deeplearning.ai, Coursera)

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