Vedant Shah

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 veds12 | 𝐢𝐧 linkedin.com/in/veds12/ | 🎓 Google Scholar

EDUCATION

Birla Institute of Technology and Science, Pilani *Sancoale, Goa*
B.E. in Electronics and Communication Engineering | CGPA: 8.92/10 *Aug. 2018 – May 2022*

RESEARCH INTERESTS

Reinforcement Learning, Meta Learning, Object Centric Representation Learning, Modular Deep Learning, Neurosymbolic AI, Robotics, Cognitive Science

PUBLICATIONS AND PREPRINTS

1. Dianbo Liu, **Vedant Shah**, Oussama Boussif, Cristian Meo, Anirudh Goyal, Tianmin Shu, Michael Mozer, Nicolas Heess, and Yoshua Bengio. Coordinating policies among multiple agents via an intelligent communication channel. ArXiv, abs/2205.10607, 2022. Link

2. **Vedant Shah** and Gautam Shroff. Forecasting market prices using DL with data augmentation and meta-learning: ARIMA still wins! In *I (Still) Can't Believe It's Not Better! NeurIPS 2021 Workshop, 2021.* Link.

3. **Vedant Shah**, Anmol Agarwal, Tanmay Tulsidas Verlekar, and Raghavendra Singh. Adapting deep neural networks for pedestrian-detection to low-light conditions without re-training. In *Proceedings of IEEE/CVF International Conference on Computer Vision (ICCV) Workshops, pages 2535-2541, October 2021.* Link.

EXPERIENCE

Mila - Quebec AI Institute | **WEB** *Sept 2021 – Present*
Visiting Researcher | Primary Advisor: Anirudh Goyal
- Working on making Reinforcement Learning Agents more generalizable using consciousness priors.

APP Center for Artificial Intelligence Research | **WEB** *Jan. 2021 – Present*
Undergraduate Researcher | Primary Advisors: Prof. Ashwin Srinivasan, Prof. Tanmay Verlekar
- Working on using Neurosymbolic Approaches for explainable Arrhythmia Detection in collaboration with TCS Research
- Previously worked on improving performance of Deep learning based pedestrian detection systems in low-light scenarios in collaboration with Oyla Inc.

TCS Research and Innovation | **WEB** *May 2021 – Aug. 2021*
Research Intern | Primary Advisor: Dr. Gautam Shroff
- Worked on improving financial market data forecasting using Deep Learning, Meta Learning and Data Augmentation

Google Summer of Code, 2021 | **PROJECT** *May 2021 – Aug. 2021*
Student Developer | Organisation: GFOSS
- Worked on adding support for adding support for genetic algorithm to Deepbots - an open source RL wrapper framework for Webots.

Center of Robotics and Machine Intelligence, IIIT Allahabad | **WEB** *Aug. 2020 – Nov. 2020*
Research Intern
- Explored the application of Deep RL algorithms in sparse reward setting of Robotic Manipulation using Hindsight Experience Replay

Selected Projects

Meta Reinforcement Learning | CODE & REPORT *March 2021*
- Implementation, Experiments and Ablation Studies for the paper: RL^2: Fast Reinforcement Learning via Slow Reinforcement Learning (Duan et al., 2016).

GenRL | PyTorch Reinforcement Learning Library | CODE | DOCS *May 2020 – Aug. 2020*
- Worked on adding support for **Petting Zoo** and Multi Agent Reinforcement Learning Algorithms.
- Developed the documentation for off-policy Deep RL approaches present in the library.

Social Cognition and Computational Social Learning | REVIEW *Aug. 2020 – Dec. 2020*
- Did an extensive review of the field of computational social learning.
- Investigated how concepts from social cognition can be incorporated into muti-agent AI systems.

Volleyball-ML | CODE | REPORT *Oct. 2020 – Nov. 2020*
- Scraped data of previous 4 years from the NCAA women's volleyball league website into a dataset.
- Tested different machine learning models using feature selection and other techniques.

GenNav | Python Library for Robot Navigation | CODE *Oct. 2020 – Nov. 2020*
- Worked on adding Artificial Potential and other path planning algorithms to the library
- Core contributor to the library

Relevant Courses

Probability and Statistics, Computer Programming, Object Oriented Programming*, Data Structures and Algorithms, Machine Learning, Reinforcement Learning*, Meta Learning†, Control Systems, Modern Control Systems, Introduction to Cognitive Neuroscience, Discrete Mathematics

† = Graduate Level ∗ = Ongoing

Technical Skills

Languages: Python, C/C++, Java, Bash, MATLAB
Deep Learning: PyTorch, Tensorflow, NumPy, Pandas, scikit-learn
Tools: Git, TravisCI, Unix, VS Code, Eclipse, LaTeX, Docker
Robotics: Robot Operating System, Gazebo, STDR, Moveit, RaspberryPi, Arduino

Workshops

1. **Google Research Week**: Selected to attend the Google Research Week 2022 for the ML Foundations Track.

Positions of Leadership, Mentoring and Teaching

Vice President - Society for Artificial Intelligence and Deep Learning | WEB *June 2021 – Present*
- Working on and managing research and open source projects, reading groups and student run courses with a group of undergraduates interested in AI and DL.

Organising Co-Lead - AI Symposium 2021 | WEB *Oct. 2021*
- Co-led a team of 10 undergraduate students in organizing an AI Symposium (700+ attendees) featuring talks and conversations with a mix of senior researchers and early career practitioners in the field of AI from across industry and academia along with a social event

Instructor - Center for Technical Education, BITS Goa | WEB *Aug. 2020 – Apr. 2021*
- Managed and taught student run courses on Causal Inference, Introductory Robotics and Robot Automation

Student Coordinator - Electronics and Robotics Club, BITS Goa | WEB *Apr. 2020 – July 2021*
- Organising research projects, student run courses on robotics and research discussion sessions, ensuring ***easy access to learning resources*** to the members and managing funds for a group of 100+ undergrads

Student Mentor - Peer Mentorship Programme, BITS Goa | WEB *Aug. 2019 – May 2020*
- Guided a group of 7 students in adjusting to the academics, and daily life in their initial days at BITS Goa