

# Vedant Shah

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🔗 veds12 | in [linkedin.com/in/veds12/](https://www.linkedin.com/in/veds12/) | 🎓 Google Scholar

## EDUCATION

**Birla Institute of Technology and Science, Pilani**

B.E. in Electronics and Communication Engineering | CGPA: 8.9/10

*Sancoale, Goa*

*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. Stateful active facilitator: Coordination and Environmental Heterogeneity in Cooperative Multi-Agent Reinforcement Learning. ArXiv, abs/2210.03022, 2022. [Link](#)
2. **Vedant Shah\***, Aditya Agrawal\*, Lovekesh Vig, Ashwin Srinivasan, Gautam Shroff, Tanmay Verlekar. Neural Feature-Adaptation for Symbolic Predictions Using Pre-Training and Semantic Loss. ArXiv, abs/2211.16047, 2022. [Link](#)
3. **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](#).
4. **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](#)

*Sep. 2021 – Present*

Visiting Researcher | Primary Advisor: [Dr. Anirudh Goyal](#)

- Investigating: the use of behavioral priors in MARL, augmenting deep learning models with retrieval and language grounding for better compositional generalization.

**APP Center for Artificial Intelligence Research** | [WEB](#)

*Jan. 2021 – Aug. 2022*

Undergraduate Researcher | Primary Advisors: [Prof. Ashwin Srinivasan](#), [Prof. Tanmay Verlekar](#)

- [Jan. 2022 - Aug. 2022] Worked on using Neurosymbolic Approaches for explainable Arrhythmia Detection in collaboration with TCS Research
- [Jan. 2021 - Aug. 2021] 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 | Advisor: [Prof. GC Nandi](#)

- Explored the application of Deep RL algorithms in sparse reward setting of Robotic Manipulation using Hindsight Experience Replay

## SELECTED PROJECTS

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- Jeta | Jax based Meta Learning library | [CODE](#)** *Jun. 2022 – Sep. 2022*
- Lead maintainer for the project.
  - Worked with a group of 5+ people to build a collection of Jax implementation of optimization based Meta Learning algorithms
- Meta Reinforcement Learning | [CODE](#) & [REPORT](#)** *Mar. 2021*
- Implementation, Experiments and Ablation Studies for the paper: RL<sup>2</sup>: 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 multi-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.
  - 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

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

<sup>†</sup> = Graduate Level

## TECHNICAL SKILLS

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**Languages:** Python, C/C++, Java, Bash, MATLAB  
**Deep Learning:** PyTorch, Tensorflow, NumPy, Pandas, scikit-learn  
**Tools:** Git, TravisCI, Unix, VS Code, Eclipse, L<sup>A</sup>T<sub>E</sub>X, Docker  
**Robotics:** Robot Operating System, Gazebo, STDR, Moveit, RaspberryPi, Arduino

## ACHIEVEMENTS

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1. Selected to attend the [Google Research Week 2022](#) for the ML Foundations Track.
2. Awarded a merit scholarship for being among the **top 3%** of the batch of 880 students in the 2nd semester.

## POSITIONS OF LEADERSHIP, MENTORING AND TEACHING

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- 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