

# Geetika Vadali

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[geetikavadali.github.io](https://geetikavadali.github.io)

## RESEARCH INTERESTS

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Deep Learning, Reinforcement Learning, Computer Vision, Computational Biology, Computational Neuroscience, AI for Healthcare, AI for Science, Game Theory

## EDUCATION

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- **Indira Gandhi Delhi Technical University for Women (IGDTUW)** Delhi, India  
*BTech in Computer Science and Engineering with Artificial Intelligence* *Aug. 2021 – May 2025*  
CGPA: **9.133/10**
- **Central Board of Secondary Education** Delhi, India  
*Senior Secondary - 94% , Secondary - 98.2%* *June 2021 , June 2019*

## RESEARCH EXPERIENCE

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- **Mitacs Globalink Research Intern:** Northern Institute for Deep Learning in Ultrasound Lab, University of Alberta, Edmonton, Canada  
*May 2024 - August 2024*
  - Research Internship supervisor - Prof. Abhilash R. Hareendranathan
  - Trained and integrated a **Deep Reinforcement Learning (DRL)** agent to an existing classifier system that facilitates earlier point-of-care diagnosis for rotator cuff tear. Was responsible for the **reward function formulation and training**. Combined concepts of video summarization, RL and medical data analysis.
  - Selected among 50+ interns to present my internship work as a Three-Minute Thesis for an interdisciplinary audience at Research Symposium, University of Alberta.
- **Undergraduate Researcher:** Murty Lab, Georgia Institute of Technology  
*December 2023 - April 2024*
  - Modelled experiments to see effects of **adversarial perturbations** on an image throughout its journey inside a ResNet50 and controlling its activation by modifying the degree of perturbations. Work in collaboration with Prof. N Apurva Ratan Murty. [Link to code](#)
- **Undergraduate Researcher:** Xu Lab, Carnegie Mellon University  
*September 2023 - January 2024*
  - Designed a python script to isolate and segment individual biological cells from given pigmented slide images. In collaboration with Dr. Ali Dabouei. [Link to code](#)

## PUBLICATIONS

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- **Shoulder Rotator Cuff Tear Detection from Ultrasound Videos using Deep Reinforcement Learning:**  
*Accepted at International Symposium on Biomedical Imaging 2025, United States*
  - Developed a novel Rotator Cuff Tear Assessment technique using DRL-based video summarization approach. Reward mechanism combines representativeness, diversity and classifier confidence.
  - Reduced training time by 50% and improved classification accuracy of torn versus intact tendon from 82.5% to 85%.
- **Spatio-Temporal Crime Detection Using Surveillance Videos in a Federated Setting:** Dec 2024  
*Under Review at International Conference on Computer Vision and Robotics 2025, NIT Goa, India*
  - Proposed surveillance video analysis system using a combination of spatio-temporal feature extraction and training in a privacy-preserving federated setting.
  - Empirical results have shown that the proposed framework significantly outperforms traditional classification models, achieving accuracies upwards of 99% while also significantly reducing training time and computational complexity. [Paper](#)
- **Convergence to Nash Equilibrium: A Comparative Study of Rock-Paper-Scissors Algorithms:** June 2023  
*IEEE International Conference on Computing, Communication, and Intelligent Systems 2023, Sharda University, India*

- Compared and analysed performances of MCTS, CFR, Q-Learning, DQN, and PPO in cyclical two-player zero-sum Rock Paper Scissors game environment. Examined their convergence rates, exploration-exploitation trade-off and average reward over 500 and 1000 episodes. [Code Paper](#)
- **Predicting Optimal Startup Exit Strategies with Ensemble Learning for Venture Capitalists:** Dec 2023  
*Springer International Conference on Artificial Intelligence and Speech Technology 2023, IGDTUW, India*
  - Proposed an Ensemble Learning model for predicting optimal startup exits that outperforms classical Machine Learning classifiers.
  - Sponsored by DST Curie-AI Project, Government of India and won the best paper award at Springer-AIST'23 from 300+ submissions. [Paper](#)

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## ACCOMPLISHMENTS

- **Winner in Wipro Climate Challenge'22** November 2022-February 2023  
*Wipro and Climate Collective* *Received grant money and incubation support*
  - **Proposed Solution:** : Our solution assures a food storage facility of 'organisation in their stock' and 'optimisation in their flow' using **AI and stock data analytics**. Won the **Top 5 across 1,175 teams** who applied and were invited to the Wipro Earthian Awards, Bangalore. Awarded grant prize of around 1200USD.

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## TECHNICAL PROFESS

- **Technical Languages:** : Python, Java, R, SQL, HTML, CSS
- **Frameworks and Tools:** : Tensorflow, PyTorch, Keras, Microsoft Office, Bootstrap, Pandas, Numpy, Tableau, Matplotlib, Scikit-Learn, Sympy, CI/CD, Bash Scripting
- **Courses Taken:** : Database Management Systems, Operating Systems, Data Structures and Algorithms, Optimization Techniques, Numerical Methods, Computer Networks, Compiler Design, Digital Image Processing
- **Conferences and Summer Schools Attended:** 9th Annual Conference of Cognitive Science, IIT Delhi; Summer School on Federated Learning, IIIT Delhi; Upper Bound Conference, University of Alberta, Amii, Presented at IC-IMPACTS Legacy Conference 2024

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## LEADERSHIP AND VOLUNTEERING EXPERIENCE

- **Founding Member of Arc - Data Science Club of IGDTUW:** Founding Director of Operations overlooking the Management, Design, Content and Research Teams. Organised and executed datathons, technical talks and community building activities.
- **Desh Ke Mentor (Mentors of the Nation) program:** Mentored 3 Delhi Government high-school girls for further education in STEM.
- **Event Management Core at Association for Computing Machinery-IGDTUW Student Chapter:** Conducted technical and outreach events in online and offline mode. ACM Society member for 2 years.

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## EXTRACURRICULARS

- **Fine Arts:** With over 15 years of professional practise, diploma holder from Pracheen Kala Kendra, Chandigarh
- **Debating:** Active member in the College Debating Club. Represented university at 3 national level Asian Parliamentary Debates. Semifinalist in IIT Delhi APD 2023.

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## REFERENCES

- **Prof. Abhilash RH:** Assistant Professor, Department of Radiology, University of Alberta, Canada  
[hareendr@ualberta.ca](mailto:hareendr@ualberta.ca)
- **Prof. Poonam Bansal:** HoD, Department of AI and DS, IGDTUW, New Delhi, India  
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- **Prof. Rishabh Kaushal:** Assistant Professor, Department of Information Technology, IGDTUW, New Delhi  
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