Anil Sharma

Personal Data

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web:	www.iiitd.edu.in/~anils/
Research Interests:	Target Tracking, Perception for Autonomous Vehicles, Reinforcement Learning, Computer Vision

Education

July 2014 - current — PhD Scholar in Computer Science
University: IIIT-Delhi, Delhi, India
Advisor: Dr. Saket Anand and Dr. Sanjit Kaul
Thesis: Intelligent Camera Selections in a Camera Network
CGPA: 9/10 (in PhD), 8.81/10 (continued from MTech)

2012-2014 — Master of Technology in Mobile and Ubiquitous Computing
University: IIIT-Delhi, Delhi, India
Topic: "Smartphone Audio based Distress Detection" | Advisor: Dr. Sanjit Kaul
CGPA: 8.67/10

2008-2012 — B.Tech in Computer Science
Maharaja Surajmal Institute of Technology, GGSIP University, Delhi, India
Percentage: 80.68% | CPI: 79.52

Work Experience

Work: 8 month internship with Sony AI, Tokyo (Sept 2021 - 12th May 2022)
Worked on object detection and lane detection in Swarath (now ALIVE, autonomous vehicle project at IIIT-Delhi)
(May 2014 - July 2014 & May 2015 - July 2015)

Teaching Assistance:
Instructor in Summer refresher module on *Introduction to C* at IIIT-Delhi
Lecture on Unsupervised Learning in Machine Learning course in Monsoon 2014 at IIIT-Delhi
Lecture on Hidden Markov Models in Statistical Machine Learning course in Winter 2018 at IIIT-Delhi
Teach. Assistant for: Artificial Intelligence, Computer Vision, Machine Learning, Pattern Recognition, Systems Management, Analysis and Design of Algorithms, Probability and Statistics

Publications

Oct. 2021 — **Anil Sharma**, Saket Anand, Sanjit Kaul, Intelligent Camera Selection Decisions for Target Tracking in a Camera Network, accepted in *WACV, 2022*. https://openaccess.thecvf.com/content/WACV2022/html/Sharma_Intelligent_Camera_Selection_Decisions_for_Target_Tracking_in_a_Camera_WACV_2022_paper.html

Aug. 2020	**Anil Sharma**, Saket Anand, Sanjit Kaul, Intelligent Querying for Target Tracking in Camera Networks using Deep Q-Learning with n-Step Bootstrapping, accepted in Special Issue *Role of Computer Vision in Smart Cities* in *Image and Vision Computing*. https://www.sciencedirect.com/science/article/pii/S0262885620301542?dgcid=author
July. 2020	**Anil Sharma**, Mayank Pal, Saket Anand, Sanjit Kaul, Stratified Sampling Based Experience Replay for Efficient Camera Selection Decisions, accepted for publication in *BigMM-2020*. https://ieeexplore.ieee.org/document/9232593/
July. 2019	**Anil Sharma**, Saket Anand, Sanjit Kaul, Reinforcement Learning Based Querying in Camera Networks for Efficient Target Tracking, accepted for publication in *International Conference on Automated Planning and Scheduling (ICAPS) 2019*. https://aaai.org/ojs/index.php/ICAPS/article/view/3522 https://www.youtube.com/watch?v=Yn0AVk7wEyI
Nov. 2018	Mayank Pal, Rupali Bhati, **Anil Sharma**, Sanjit Kaul, Saket Anand, PB Sujit, A Reinforcement Learning Approach to Jointly Adapt Vehicular Communications and Planning for Optimized Driving, accepted for publication in *IEEE ITSC-2018*. https://ieeexplore.ieee.org/abstract/document/8569484
July. 2018	**Anil Sharma**, Prabhat Kumar, Saket Anand, Sanjit K. Kaul, Multi Camera Target Tracking using Reinforcement Learning, accepted for presentation in *CogVis-2018* workshop with ICML/IJCAI-ECAI-2018.
July. 2018	**Anil Sharma**, Arun Balaji Buduru, Foresee: Attentive Future Projections of Chaotic Road Environments with Online Training, accepted for publication (as extended abstract) in *AAMAS-2018*. https://arxiv.org/abs/1805.11861 https://dl.acm.org/citation.cfm?id=3237383.3238076
Feb. 2016	**Anil Sharma**, Sanjit Kaul, Two-Stage Supervised Learning-Based Method to Detect Screams and Cries in Urban Environments, published in *IEEE/ACM Transactions on Audio, Speech and Language Processing, 2016*. http://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=7348673&isnumber=7370838

Skills

Prog. Lang.:	C, Java, Matlab (proficient), Android, Python (proficient)
Tools:	PyTorch, MatConvNet, OpenCV (Android and C++), ROS (Robot Operating System), Praat, TensorFlow (beginner), Visual Studio, NSL
Hardware:	Bumblebee, VLP-16 (Lidar), NAVIO, Pixhawk

Projects

PhD Thesis	Intelligent Camera Selections in a Camera Network. Guide: Dr. Saket Anand and Dr Sanjit Kaul In this project, we are designing policies for an autonomous agent to learn target tracking in multiple camera network.

Jan - Aug 2018	Reinforcement Learning Based Querying in Camera Networks for Efficient Target Tracking. Guide: Dr. Saket Anand and Dr. Sanjit Kaul We proposed a reinforcement learning based approach for target tracking in multiple cameras which achieved $10\times$ improved in computational time.
Jan - Oct 2017	Foresee: Attention based Future Prediction of a Chaotic Road Environment. Guide: Dr. Arun Balaji Buduru We developed a deep learning based system for a chaotic road environment using images from a dashboard camera mounted on a vehicle. The system predicts the future of the environment using attention and GRU layers of a deep neural networks and projects on an image for behavioral cloning or path planning of an autonomous vehicle.
Jan '15 - Aug '17	Swarath: Autonomous Vehicle of IIIT-Delhi. Worked on Object Detection and Lane Driving for Perception module Details: https://cai.iiitd.ac.in/research.php
Jan-Dec 2015	Smartphone Audio based Distress Detection . Guide: Dr. Sanjit Kaul We propose a novel two-stage supervised learning based method for monitoring signs of distress (screaming and crying sounds) in the presence of urban environment. We also created IUEC database which contains 250 hours of audio data for screams and environmental context.

Awards and Achievements

Feb 2019	Received Google Travel Grant for ICAPS-2019.
Jan 2019	Qualified NET (National Eligibility Test) with 99.77 percentile for Assistant Professor and JRF (Junior Research Fellow) conducted by UGC (University Grants Commission), Govt. of India.
June 2018	Received ICML student Travel Grant for ICML-2018.
Feb 2018	Received Microsoft Travel Grant for AAMAS-2018.
Feb 2018	Top writer on Quora for answers on Reinforcement Learning and Artificial Intelligence.
Mar 2015	First prize in Elevator Pitch at Research Showcase 2015, IIIT-Delhi for best demo of *Smartphone Audio based Distress Detection*.

Relevant courses

IIIT-Delhi: Computer Vision (9), Computer Vision Applications (10), Probabilistic Graphical Models (9), Machine Learning (10), Pattern Recognition (9), Cellular Data Networks (10), Embedded Systems (9), Applied Cryptography (9).

References

References available on request.