

Dhruv Agarwal

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EDUCATION

Ashoka University | SONIPAT, INDIA

P.G.D. in Advanced Studies and Research | 2019 - 2020

CGPA: 4.0 / 4.0 | **Summa cum laude**

Thesis: On-Demand Drive-by Sensing – Incentivizing Drivers to Collect Off-Route Pollution Data

Ashoka University | SONIPAT, INDIA

B.Sc. (Hons.) in Computer Science | 2016 - 2019

CGPA: 3.84 / 4.0 | Major: 3.98 / 4.0 | **Magna cum laude**

EXPERIENCE

Microsoft Research | RESEARCH FELLOW, AI CENTER

Jun 2020 – Present | Bangalore, India

- Developed Turn2Earn, a novel way of improving data coverage using vehicular crowdsensing.
- Bayesian modelling of air pollution using wind dispersion models and NASA pollutant data.

Microsoft Research | RESEARCH INTERN

May 2019 – Aug 2019 | Bangalore, India

- Designed a greedy algorithm to maximize city coverage for drive-by sensing.
- Library open-sourced by Microsoft: <https://github.com/microsoft/Modulo>.
- Implemented by Ola Cabs (\$6.2 billion worth) – 300% improvement.

Mirabilis Design | SOFTWARE ENGINEERING INTERN

Dec 2018 – Jan 2019 | Chennai, India

- Developed tool-chain to run system-level simulations of executables compiled for different architectures for performance analysis.
- Generated execution traces of ARM executables from QEMU source code for VisualSim software.

Ampersand Design | UI DEVELOPMENT INTERN

Jul 2017 – Aug 2017 | Gurgaon, India

- UI design and development of interaction heavy web pages for the State Bank of India.

RESEARCH INTERESTS

Human-Computer Interaction, Sensing, Applied AI/ML

Application Areas: Health, ICTD, Education, Sustainability, Sports

RESEARCH PUBLICATIONS

1. Understanding Driver-Passenger Interactions in Vehicular Crowdsensing. ACM CSCW 2021.
D. Agarwal, S. Agarwal, V. Singh, S. Iyengar, M. Jain. [Methods Recognition Award](#).
2. Modulo: Drive-by Sensing at City-scale on the Cheap. ACM COMPASS 2020.
D. Agarwal, S. Iyengar, M. Swaminathan, et al. [Best Paper Award](#).
3. Poster: An Alternative to India's Reservation Policy. ACM COMPASS 2020.
D. Sinha, O. Sahasrabudhe, **D. Agarwal**, D. Gupta. ACM SenSys 2019.
4. Poster: System for Vehicle Selection in Drive-by Sensing.
D. Agarwal, S. Iyengar, M. Swaminathan.
5. A Billion Souls: A Security & Privacy Review of India's "Aadhaar" Biometric ID. Under review.
D. Agarwal, P.R. Tiwari, P. Jain, S. Dasgupta, D. Gupta.

AWARDS AND RECOGNITION

Undergraduate Research Excellence Award
Methods Recognition Award
Best Paper Award
Dean's List – All 8 Semesters
Student Life Excellence Award
Alok Bhatla True Marian Award
Shadow Program Committee

Computer Science Department
ACM CSCW 2021
ACM COMPASS 2020
Dean of Academic Affairs
Office of Student Life
School Instituted Award
ACM COMPASS 2021

TECHNICAL SKILLS

Python • JavaScript • React + Vue • PHP • Git
Hyperledger • L^AT_EX • MongoDB • Flask • Keras

C++ • C • Bash • SQL • Java • Android
Photoshop • Arduino • Raspberry Pi

MEDIA COVERAGE

The Hindu

Ola, Microsoft to analyse street-level air quality

The Business Insider

Ola and Microsoft come together to measure air quality on the streets of India's national capital

The Economic Times

Ola partners with Microsoft Research to study street-level air quality in Delhi-NCR

PROJECTS

Exploring Human Bias in FIFA Ratings

Prediction of football players' future FIFA ratings from their previous ratings and on-ball actions.

Fake News Challenge

An NLP approach to the Stance Detection problem using a novel "staged" technique.

Beating Facial Obfuscation with ML

Convolutional autoencoder to recreate blurred, pixelated or blocked facial images.

SpliDwise

A Hyperledger-based distributed app to track money sharing and expenses among friends.

COVID-19 Multilingual Knowledgebase

FAQ website to combat misinformation surrounding the crisis in local Indian languages.

VAHN: Vehicle Accident Hazard Notifier

A real-time smart city system for automatic detection and reporting of road accidents.

Ashoka Menu and Shuttle Bot

Chatbot to inform students about mess menu, shuttle timings. [800 users](#) and 190k messages.

Energy Sensing System for Dorms

Hardware prototype to monitor real-time energy wastage expressed in monetary loss.

SELECTED COURSEWORK

Math	Discrete Math • Probability & Statistics • Linear Algebra
Systems	Computer Organization • OS • PLDI (PLs) • Networks
Theory	Algorithms • Advanced Algorithms • Theory of Computation
AI/ML	Intro to ML • Advanced ML • Unstructured Information Processing
Security	Computer Security • Blockchain
HCI	Data Visualization • New Geographies of Information Age

[Teaching](#) Intro to ML • Discrete Math • New Geographies of Information Age

STUDENT ACTIVITIES

University Sports Teams | ASHOKA UNIVERSITY

August 2016 – May 2020

- Lawn Tennis – Gold in men’s doubles, vice-captain, U-18 nationals
- Badminton – Gold in team event
- Football – Gold and silver at inter-varsity tournaments

Technology Minister | ASHOKA UNIVERSITY STUDENT GOVERNMENT

March 2017 – March 2018

- Elected into 15-member Student Government. Nominated as Tech Minister by President.
- Introduced apps for campus life; technology consultant for 1500+ students.

Volunteer Instructor | AD-HOC WORKSHOPS

August 2016 – Present

- Photoshop & Web Development – 3 sessions, 80 students
- Python for Physicists – 2 sessions, 30 students
- Google ExploreML – amongst 60 chosen out of 1000+ applicants.
- Computer Science Hepdesk – Weekly walk-in CS doubt sessions

SERVICE & TEAMWORK

Project Muskaan | FOUNDER & HEAD

July 2018 – May 2019

- Instituted a program to teach computers to kids from a rural background.
- The student body’s most successful social initiative since Ashoka’s inception.

Agneepath – Sports Festival | FOUNDER & FEST SECRETARY

March 2017, November 2017, November 2019

- Curated and organised Ashoka’s annual inter-varsity sports festival.
- Led [70-member](#) team thrice in 4 years: team formation, organisation, delegation of work, execution.

Banjaara – Cultural Festival | HEAD OF TECHNOLOGY

February 2017

- Developed website, digital solutions to organizational issues like entry coupons and certificates.