AMIL DRAVID

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scholar.google.com/citations?user=YZ8Y-sUAAAAJ&hl=en

OVERVIEW

I am a fourth-year Northwestern computer science and statistics undergraduate student working in computer vision and machine learning. I aim to create reliable autonomous visual agents. My research interests include causal inference and explainability, generative modeling, domain adaptation/generalization, and self-supervised learning. I aspire to pursue an academic career in research and teaching.

EDUCATION

Northwestern University: BS in Computer Science, Minor in Statistics   Expected June 2023
GPA: 4.00

Selected Coursework: Machine Learning; Graduate Deep Learning; Computer Vision; Graduate Computer Vision (scheduled); Graduate Statistical Pattern Recognition; Computational Photography; Graduate Generative Models; Discrete Math; Linear Algebra; Multivariate Calculus; Statistical Theory; Data Structures; Algorithm Design and Analysis; Signals and Systems

Activities: IEEE Student Branch President, Society of Asian Scientists and Engineers Internal Affairs Chair, Computer Science Buddy/Mentor, Engineering Outreach to High Schoolers, Internationally Ranked Taekwondo Competitor, Jazz Percussionist

Professional Society Membership: IEEE, Tau Beta Pi, Sigma Xi

PUBLICATIONS *(CITATIONS: 112, H-INDEX: 2)*

(* denotes equal contribution.)

BKinD-3D: Self-Supervised 3D Keypoint Discovery from Multi-View Videos
Sun J.*, Karashchuk P.*, **Dravid A.***, et al. Submitted to *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2023.

DeepSIFT: Rethinking Domain Generalization via Invariant Input Representations
Dravid A.*, Mahendar V.*, Ge Y., et al. Submitted to *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2023.

medXGAN: Visual Explanations for Medical Classifiers through a Generative Latent Space
Dravid A., Schiffers F., Gong B., Katsaggelos AK. *Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition (CVPR) Workshops*, 2022.

Investigating the Potential Of Auxiliary-Classifier GANs for Image Classification in Low Data Regimes
Dravid A., Schiffers F., Wu Y., Cossairt O., Katsaggelos AK.
Proceedings of the IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP), 2022.

Visual Explanations for Convolutional Neural Networks via Latent Traversal of Generative Adversarial Networks (Student Abstract)
Dravid A., Katsaggelos AK.
Proceedings of the AAAI Conference on Artificial Intelligence, 2022.

Early Upper Aerodigestive Tract Cancer Detection Using Electron Microscopy to Reveal Chromatin Packing Alterations in Buccal Mucosa Cells
Bugter, O & Li, Y., Wolters, A., Agrawal V., **Dravid A.**, et al.
Microscopy and Microanalysis, 2021.

DeepCOVID-XR: An Artificial Intelligence Algorithm to Detect COVID-19 on Chest Radiographs Trained and Tested on a Large US Clinical Dataset
Wehbe, R., Sheng, J., Dutta, S., Chai, S., **Dravid, A.**, et al.
Radiology, 2021.

Interpretation of Brain Morphology in Association to Alzheimer's Disease Dementia Classification Using Graph Convolutional Networks on Triangulated Meshes
Azcona, EA., Besson, P., Wu, Y., Punjabi, A., Martersteck, A., **Dravid, A.**, et al.
International Workshop on Shape in Medical Imaging in MICCAI Proceedings, 2020

Employing Deep Networks for Image Processing on Small Research datasets
Dravid, A.
Microscopy Today, 2019.

EXPERIENCE

Undergraduate Researcher: Northwestern Image and Video Processing Lab (IVPL) Oct. 2019-Present
PI: Prof. Aggelos Katsaggelos
Tackling a variety of problems in visual recognition, generative modeling, medical imaging, etc. Collaboration with Computational Photography Lab headed by Prof. Oliver Cossairt as well.

Visiting Researcher and Collaborator: Berkeley AI (BAIR) Aug. 2022-Present
PI: Prof. Alexei (Alyosha) Efros, Collaborator: Yossi Gandelsman
Leveraging GAN and CLIP visual representation for inverting and editing out-of-distribution images.

Caltech Summer Undergraduate Research Fellow July-Sept. 2022
PI: Prof. Pietro Perona, Collaborator: Jennifer Sun
Robust estimation of 3D keypoints and skeletal structure via self-supervision.

Research Intern at Microsoft Research, Computer Vision Group April-July 2022
Mentors: Vibhav Vineet, Neel Joshi
Developing distributionally robust vision neural networks by introducing differentiable local feature descriptors and shape bias.

Google Research Mentorship Program (CSRMP) Mentee Jan.-July 2021
Mentor: Boqing Gong
Developing a GAN framework to disentangle features specific to medical classifiers' decisions.

High School Researcher, Northwestern University Dec. 2017-Jan. 2019
Mentors: Yue Li, Karl Hujsak
Automatic analysis of cancer features in cell micrographs with convolutional neural networks and spatial autocorrelation analysis.

SELECT HONORS AND AWARDS

The Barry Goldwater Scholarship 2021
Awarded $15,000 scholarship over junior and senior year for excellence in natural science, mathematics, or engineering research.

CRA Outstanding Undergraduate Researcher Finalist 2022
One of the top ∼30 undergraduate students recognized in North America for making significant contributions and displaying potential in computing research.

TALKS

Rice University Vision and Imaging Speaker Series (Invited by Rice Vision Group)	Feb. 2023
IEEE and CVF International Conference on Computer Vision and Pattern Recognition Workshop, New Orleans	June 2022
IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP), Singapore	May 2022
Northwestern University Undergraduate Computer Science Research Showcase (Invited by CS Dept.)	April 2022
AAAI Conference on Artificial Intelligence, Virtual	Feb. 2022

SERVICE AND TEACHING EXPERIENCE

Research Mentor
Mentees: Shreya Sridhar (C/O 2025), Juwon Park (C/O 2025), Said Aydin (High School C/O 2023) Jan. 2022-Present

Course Content Developer and Guest Lecturer
ECE 435 - Graduate Deep Learning Foundations (ECE Dept., Northwestern) Winter 2021, 2022

Teaching Assistant
COMP SCI 349-Machine Learning (Computer Science Dept., Northwestern) March-June 2021

Workshop Organizer and Lecturer
Deep Learning in Practice (Computer Science Dept., Northwestern) Jan. 4-8 2021