

Arushi Rai

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Education

University of Pittsburgh

August 2021 - Current

Doctorate in Computer Science

Relevant Coursework: Introduction to NLP, Machine Learning (ongoing)

Illinois Institute of Technology

July 2017 - Dec 2020

Bachelor of Science in Computer Science

GPA: 3.76

Honors: Magna Cum Laude

Relevant Coursework: Philosophy and Psychology of Language, Geospatial Vision and Visualization, Linear Algebra, Operating Systems, Data Mining, Probability and Statistics, Regression, Online Social Networks Analysis

Research Experience

Graduate Research Assistant

August 2021 - Current

University of Pittsburgh

Project Name: Weakly Supervised Object Detection — **Supervisor:** Dr. Adriana Kovashka

- Training object detection models using weak supervision from naturally-occurring, but noisy captions
- Designing experiments and performing analysis to uncover relevant features to detect noisy image-text pairs.

Research Experience for Undergraduates in Computer Vision

May 2020 - August 2020

University of Central Florida — Center for Research in Computer Vision

[Link to Report](#)

Project Name: Unsupervised Activity Representation Learning in Long Complex Activities — **Supervisor:** Dr. Yogesh Rawat

- Trained model in an unsupervised manner by using cluster assignments of feature embeddings produced by the text and video encoder.
- Adapted SOTA frameworks such as DeepCluster and XDC in **Pytorch** to handle video and caption data.
- Improved task classification performance by 5% by pretraining video encoder using the text modality.

Elevate Research Experience

May 2019 - June 2019

Illinois Institute of Technology

[Link to Slides](#)

Project Name: Moving beyond Cameras for 3D Perception: LiDAR — **Supervisor:** Dr. Xin Chen

- Implemented an out of core Nested Octree in **Python** to query and batch operations on LiDAR data in a spatially-aware manner to run compute intensive misalignment correcting algorithms.
- Analyzed LiDAR data visually using **CloudCompare**.

Professional Experience

Chatchamp

June 2018 - Dec 2018

Software Engineering Intern

- Increased client dashboard performance significantly by pre-generating analytics in database.
- Increased code coverage by over 50% and applied behavior-driven development by writing unit tests in the **Mocha** framework for the **Node.js** backend and using **rspec** in the **Rails** client application.
- Created a small microservice in a service-oriented architecture to capture e-commerce analytics from Magento shops.

Highlighted Projects

[The Nature of Vision-Language Models on Memes](#) — 2021

- Designed experiments and applied hypothesis testing to measure effect of pragmatic and discourse attributes on pretrained vision-language models like CLIP and LXMERT by computing vision-language alignment.

Search Feature for Socratic Diary — 2021

- Reduced performance cost from polynomial round robin comparison to linear comparison by generating custom (SimHash) indexes in Firestore to scale question search.

Food Ordering Web Application — 2020

- Extrapolated system requirements from user requirements and prototyped an end-to-end food ordering application in **React** and **Flask** with **PostgreSQL**.
- Designed the database schema, wrote **DDL** statements and CRUD queries in **SQL**.
- Prevented security vulnerabilities like **SQL** injection attacks.

News Agreement — 2020

- Applied neural networks in **Keras** to classify agreement between pairs of news titles.

s-cube — 2019

- Analyzed insights from user interviews to prototype a wireframe connecting Chicago youth to local resources through STEAM-based projects.

vThings — 2016

- Implemented vehicle tracking and calculated geofencing heuristics using WiFi and GPS signals in **Android** and **Java**.

Teaching Experience

Computer Science Lab Assistant

Jan 2020 - May 2020

CS 351: Systems Programming

Illinois Institute of Technology

- Ran weekly 1 hour of demos and 2 hours of office hours to help students on assignments
- Created and presented 13 engaging demos that would teach C and systems programming concepts effectively

Peer Tutor

Jan 2020 - May 2020

Academic Resource Center

Illinois Institute of Technology

- Provided 10 hours of tutoring weekly to undergraduates across previously taken CS courses and programming help in Python, Java, and C
- Attended workshops to improve my tutoring pedagogy
- Adapted tutoring to online due to COVID-19 pandemic

Supplemental Instructor

Aug 2019 - Dec 2019

MATH 148: Precalculus

Illinois Institute of Technology

- Created material and facilitated reviews prior to exams
- Created supplemental problem sets for bi-weekly review sessions
- Attended all days of the course to stay up to date with in-class instruction

Facilitator

June 2019 - Aug 2019

Explore Engineering: Ten80 Student Race Challenge

After School Matters — Project Exploration

- Coordinated across Project Exploration, ASM, and the S4 program in San Francisco to have 15 students from underrepresented backgrounds build and launch microsatellites while having limited resources and a short deadline

CodeCoach

Jan 2018 - Mar 2018

theCoderSchool

- Developed a project based curriculum and taught concepts such as object oriented programming and networking with over 20 students and languages such as Python, Java, C++/C, ReactNative and Android development

Relevant skills

AI: Python, PyTorch, Keras, SciKit-Learn, Pandas, SQL, OpenCV, NetworkX

Other: Java, React, Flask, LaTeX, Pitching, C/C++

Awards and Leadership

SCHOLARSHIPS AND AWARDS

2020	Honors Magna Cum Laude	Awarded By IIT
2017-2020	Recipient Camras Scholarship - Academic & Leadership Achievement	<i>Full-tuition scholarship Awarded to 1% of school Awarded By IIT</i>
2017-2020	Recipient Dean's List x3	Awarded By IIT

PRIZES

2020	Runner Up Best Water Conservation Hack	<i>BoilerMake Hackathon at Purdue</i>
2020	1st Place Best Design using Sketch	<i>BoilerMake Hackathon at Purdue</i>
2019	1st Place Human-Centered Design Track on IPro Day	<i>\$1000, 1/50 teams Awarded By IIT</i>
2019	1st Place Best Voice Experience for Ulta Beauty using Google Cloud	<i>Out of 300 participants Dare Mighty Things Hackathon</i>

ORGANIZATIONS

2021-	Computer Vision Interest Group Moderator	<i>Machine Learning Collective</i>
2020	President ACM@IIT	<i>Association for Computing Machinery Chapter</i>
2017-2020	Member ACM@IIT	