

## EDUCATION

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### The University of Texas at Austin

Ph.D. in Computer Science

Austin, USA

Aug 2023 - Present

- *Advisor*: Roberto Martín-Martín

### Columbia University

Masters of Science in Computer Science, GPA: 4.02/4.00

New York, USA

Sep 2021 - May 2023

- *Advisor*: Shuran Song
- *Selected Coursework*: Robot Learning, Reinforcement Learning, Computational Aspects of Robotics, Self-supervised Learning, Advanced Algorithms, Computer Vision, Fundamentals of Distributed Systems

### Indian Institute of Information Technology, Allahabad

Bachelor of Technology in Information Technology, GPA: 9.17/10

Prayagraj, India

Jul 2015–Jul 2019

- *Selected Coursework*: Deep Learning, Machine Learning, Artificial Intelligence, Image Processing, Data Structures and Algorithms, Linear Algebra, Convex Optimization, Probability and Statistics

## PUBLICATIONS

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### REFLECT: Summarizing Robot Experiences for Failure Explanation and Correction

Zeyi Liu\*, Arpit Bahety\*, Shuran Song

*Under Review*, [Webpage](#)

### Bag All You Need: Learning a Generalizable Bagging Strategy for Heterogeneous Objects

Arpit Bahety\*, Shreya Jain\*, Huy Ha, Nathalie Hager, Benjamin Burchfiel, Eric Cousineau, Siyuan Feng, Shuran Song

*IROS 2023*, [Webpage](#)

### Automatic quantification and visualization of street trees

Arpit Bahety, Rohit Saluja, Ravi Kiran Sarvadevabhatla, Anbumani Subramanian, C. V. Jawahar

*Indian Conference on Computer Vision, Graphics and Image Processing, 2021*, [Paper](#)

### An approach to computational creation of insight problems using CreaCogs principles

Arpit Bahety, Ana-Maria Olteteanu

*7th International Workshop on Artificial Intelligence and Cognition, 2019*, [Paper](#)

### Towards a multi-level exploration of human and computational re-representation in unified cognitive frameworks

Ana-Maria Olteteanu, Mikkel Schöttner, Arpit Bahety,

*Frontiers in Psychology*, [Paper](#)

\*indicates equal contribution

## RESEARCH EXPERIENCE

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### Columbia Artificial Intelligence and Robotics (CAIR) Laboratory

Advised by Prof. Shuran Song

New York, NY

Oct 2021 - Present

- Research on deformable object manipulation. Implementing the first real-world, generalized bagging strategy using UR5 robots.
- Research on failure summarization and re-planning in long-horizon tasks performed by a robot.

### Centre for Visual Information Technology (CVIT) Laboratory, IIIT-Hyderabad

Advised by Prof. C. V. Jawahar, Prof. Ravi Kiran Sarvadevabhatla, Prof. Rohit Saluja

Hyderabad, India

Jan 2021 - Sep 2021

- Research in computer vision. Implemented a real-world system to quantify and visualize street trees

### **Creative Cognitive Systems group (CreaCogs), Freie Universität Berlin**

Advised by Dr. Ana-Maria Olteteanu

Berlin, Germany

Jan 2019 - July 2019

- Research on understanding creative capabilities in humans. Created a framework to generate solve insight problems (one category of creative problem-solving in humans)

## TEACHING

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### **Teaching Assistant**

Computational Aspects of Robotics

Spring 2022

Columbia University

- Holding office hours and answering questions on Ed
- Refactoring and documenting homeworks and automated grading scripts
- Grading assignments

### **Teaching Assistant**

Neural Networks and Deep Learning

Fall 2021

Columbia University

- Holding office hours and answering questions on Ed
- Discussing and mentoring students for course projects
- Refactoring and helping create questions for exams
- Grading assignments and exams

## INDUSTRY EXPERIENCE

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### **Citigroup**

Software Development Engineer

Pune, India

Sep 2019 - Dec 2020

- Developed voice assistance for an application that required users to perform a manual search and drag-and-drop actions. Increased user efficiency by 75%
- Created an offline hot-word detection model using Tensorflow.js. Built a speech-to-text model (in Python and Angular) using DeepSpeech. Fine-tuned the Language & the Acoustic model to incorporate Citi-specific words.

## OTHER PROJECTS

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### **Learning from Play for Deformable Object Manipulation**

Jan - May 2022

Arpit Bahety, [PDF](#)

As part of COMS 6998: Self-supervised Learning

- Developed a framework for playful interactions with deformable objects to learn visual representations. Then learn task-specific linear heads on top of the representation
- Run experiments to assess the effectiveness of playful interactions for downstream deformable object manipulation tasks

### **Covid19 mRNA Vaccine Degradation Prediction**

Aug - Oct 2020

Arpit Bahety, [Kaggle](#)

Bronze Medal, Kaggle

- Modeled a Graph Convolutional Network with nucleotides as nodes and bonds as edges. Created another model based on Attention & RNN. Combined them to predict the stability of a mRNA sequence
- Performed Denoising Autoencoder pre-training which enabled me to use test data too. Used output of the encoder part of the Autoencoder as input to the Attention + RNN model

### **Hand Gesture based Human-Robot Interaction**

Jul-Dec 2018

Arpit Bahety, Ankur Dengla, [PDF](#)

As part of Deep Learning, IIIT-A

- Developed a 3D CNN model to recognize gesture in the form of videos. Trained it on the 20BN-Jester dataset. Eight gesture classes used. Top 1 validation accuracy of 96.784 % & Top 1 test accuracy of 96 %
- Incorporated the model with Nao Robot where Nao responds to the gestures appropriately

### **GitRate: a Web Application for rating GitHub Profile**

Jan-Mar 2018

Arpit Bahety\*, Gaganjeet Reen\*, [Video](#)

- A web application summarizing and rating GitHub profiles to aid in candidate selections for hackathons and for company Recruitments

- Trained a neural network for predicting the score of a user/group of users. Main features for the neural network are - Stars, forks, commits to repository, number of followers, following, open-source commits
- Recommendations on how to improve your GitHub profile

## HONORS AND AWARDS

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<b>Course Assistant Fellowship</b> , Columbia University	Jan 2022
<b>Bronze</b> , OpenVaccine Kaggle challenge	Oct 2020
<b>Captain of Boys Tennis &amp; Basketball Team</b> , IIIT-Allahabad,	2017-2019
<b>Member of Music Society</b> , IIIT-Allahabad,	2016-2019
<b>Gold</b> , Parliamentary Debate	Feb 2016

## ACADEMIC SERVICE

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**Reviewer:** ICRA (2023), IROS (2023)

## LANGUAGES

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English, Hindi

## SKILLS

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**Technologies:** Python, C/C++, Java, Javascript, HTML & CSS,

**Frameworks & Tools:** PyTorch, Blender, Git, Docker

**Simulation Environments:** PyFlex, PyBullet, AI2-THOR, iGibson