

Kartik Srinivas

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Education

- **Carnegie Mellon University** Pittsburgh, Pennsylvania
Masters in Machine Learning June 2024-
- **Indian Institute of Technology, Hyderabad** Hyderabad, India
B.Tech - Computer Science (Hons) & Engineering Sciences & Minor AI; GPA: 9.56 July 2020 - June 2024

Honors and Awards

- **Institute Academic Excellence (Thrice)**
SGPA :- 9.80 2021 - 2022, 2022-2023, 2023-2024
 - Rank: Department Rank 1
- **Honors Programme**
SGPA :- 9.80 2021 - 2022
 - Honors in CSE: Accepted into the Computer Science Honors Programme

Publications

- **Overcoming Data and Model Heterogeneities in Decentralized federated learning** ICML - 2024
Kartik Srinivas, Chun-Yin Huang*, Xiaoxiao Li, Xin Zhang* 2023

Research Experience

- **TEA Lab, University of British Columbia, Vancouver**
Undergraduate Researcher May 2023 - Present
 - Under: [Dr.Xiaoxiao Li](#)
 - **Research Problem 1:** Theoretical analysis of Federated Learning with Neural Tangent Kernels
 - **Research Problem 2:** Federated learning with Heterogeneous datasets and Models
- **Machine Learning and Vision Group - IIT Hyderabad**
Undergraduate Researcher Aug 2022 - Present
 - Under: [Dr.Vineeth Balasubramanian](#)
 - **Research Problem 1:** Developed Standard PAC bounds on Domain incremental Learning.
 - **Research Problem 2:** Using Machine Unlearning for Class decremental Domain Adaptation

Teaching

- **Tensor Techniques - CS6070**
Undergraduate Teaching Assistant Dec 2021 - Feb 2022
 - **Doubt Clearing Sessions:** Held doubt clearing sessions for nearly 80 students on Linear Algebra and Tensor decompositions
 - **Evaluations:** Corrected Exam sheets and Assignments
- **Theory of Computation**
Undergraduate Teaching Assistant Sep 2022 - Feb 2023, Sep 2023 - Feb 2024
 - Under:: [Dr.Subrahmanyam Kalyanasundaram](#)
 - **Assignments:** Developing weekly assignments for students taking the course on the [NPTEL Platform \(Government of India's National Education Portal\)](#) on Computability theory and solving doubts that the students may face
- **Deep Learning - AI5000**
Undergraduate Teaching Assistant Sep 2023 - Present
 - Under:: Dr.Konda Reddy Mopuri
 - **Assignments:** Developing weekly assignments for students taking the course, and doing paper corrections and invigilation
- **Introduction to Programming - ID1063**
Undergraduate Teaching Assistant Sep 2021 - Feb 2021, Sep 2023 - Feb 2024
 - Under:: Dr.Ramakrishna Upadrasta, Dr Karteek Sreenivasiah, Dr Vineeth Balasubramanian
 - **Assignments:** Developing weekly assignments for students taking the course, and doing paper corrections and invigilation

Projects

- **Accelerated Mirror Descent Methods:** Analysis of Optimization algorithms like Mirror descent, Proximal Gradient Descent, Proximal Mirror descent and their Accelerated versions
- **NABLA:** NABLA is a Domain specific programming language that my team and I have built that supports Tensor operations and automatic differentiation. The language is more user friendly and after compilation calls C - procedures to perform back prop on the Computational graph. This was done under [Dr.Ramakrishna Upadrasta](#)
- **Collaborative Filtering - Microsoft Engage:** Built a Movie Recommendation Engine using Flask and Scikit using Nearest Neighbour methods and Collaborative filtering, was given an [SDE offer post-completion](#).
- **Support Vector Machines:** Theoretical Analysis of SVM's. Analyzed VC Dimensions of Kernel based SVM's and programmed the Dual and primal forms of the Problem using Convex Solvers like CVXPY. This was a **team** project under [Dr.Aditya Siripuram](#)
- **Randomized Tensor Decompositions:** Involved programming PARAFAC decompositions of tensors, and using random sampling methods to make them more efficient. Done under CS6070 - Tensor Analysis under the guidance of [Dr.Rameshwar Pratap](#)
- **Visual Cryptography:** Implemented the following [Research Paper](#) in C++, it creates 2 out of n secret sharing using scrambling of images to conceal a hidden key. This was done under [Dr. NR Aravind](#)
- **Separating Strings Using Finite Automata:** Worked on a problem involving finding the smallest possible automata(DFA) that can accept one string, but reject the other. (both being of size n) under [Dr.Subrahmanyam Kalyanasundaram](#)

Extra-Curricular Activities

- **Machine Learning Club - IIT Hyderabad** IITH
Core Member - Built website and Gave 3 Lectures *June 2022 - Present*
- **IITH Basketball** Hyderabad, India
Part of the Inter IIT Basketball team, and NSO Basketball post injury *2021 - 2024*
- **Elan Organizing Team** Hyderabad, India
Organizer for Ethical hacking workshop *2021 - 2022*
- **Elan Publicity Team** Hyderabad, India
Volunteer for the Publicity Domain *2021 - 2022*