

# Aditya Prasad

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## EDUCATION

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### University of Southern California - 3.70 Cumulative GPA

August 2020–May 2024

*Bachelor of Science in Computer Science*

*Los Angeles, CA*

- Graduate Coursework: Convex and Combinatorial Optimization, Advanced Analysis of Algorithms, Computational Perspectives on the Frontiers of Machine Learning, Theory of Machine Learning
- Undergraduate Coursework: Discrete Methods in Computer Science, Artificial Intelligence, Computer Systems, Data Science and Object Oriented Design, Software Engineering, Algorithms and the Theory of Computing, Calculus III

## PAPERS

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### On Supermodular Contracts and Dense Subgraphs\*

May 2022–July 2023

*Ramiro Deo-Campo Vuong, Shaddin Dughmi, Neel Patel, Aditya Prasad*

[\*arXiv link\*](#)

- Presented at USC Theory Lunch in March 2023.
- Accepted at ACM-SIAM Symposium on Discrete Algorithms (SODA 2024).

## EXPERIENCE

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### Research Assistant - Contract Theory

May 2022–July 2023

*University of Southern California*

*Los Angeles, CA*

- Worked with Shaddin Dughmi, Neel Patel, and Ramiro Deo-Campo Vuong to solve supermodular single and multi-agent contracts problem.
- Developed a strongly polynomial time algorithm to reconstruct single agent utility curve and calculate the breakpoint of every set in demand.
- Showed NP-Hardness of multi-agent problem and developed an additive-PTAS for the case of uniform cost graph instances.

### Research Assistant - Linear Programming

June 2023–Present

*University of Southern California*

*Los Angeles, CA*

- Working with Professor Vatsal Sharan to find new characteristics of the optimal solution in linear programming.
- Attempting to use these new characteristics to develop new techniques in linear programming.

### CSCI 270 (Algorithms) Course Producer

January 2022–May 2023

*University of Southern California*

*Los Angeles, CA*

- Held office hours and discussions to provide students with assistance on challenging course material.
- Designed and graded homework and exam problem sets.

### CSCI 170 (Discrete Mathematics) Course Producer

June 2023–August 2023

*University of Southern California*

*Los Angeles, CA*

- Held office hours and discussions to provide students with assistance on challenging course material.
- Graded homework assignments and exams.

### Artificial Intelligence Research Assistant

July 2019–May 2020

*Purdue University*

*Princeton, NJ*

- Implemented machine learning algorithms (neural networks, AdaBoost, random forests) with scikit-learn and Keras.
- Collaborated remotely with Professor Wreeto Kar to combine machine learning algorithms in ensemble learners.
- Applied ensemble learners in an ad selecting algorithm that maximizes viewer retention rate and ad revenue.

## HONORS

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### NSF Summer Research Grant

June 2022–August 2022

- Summer research grant for work in contract theory with Professor Shaddin Dughmi.

## PROJECTS

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### Dynamic Programming Visualizer\*

August 2023–Present

*Ramiro Deo-Campo Vuong, Eric Han, David Kempe, David Lee, Aditya Prasad, Tianyu Wang*

- Working with Professor David Kempe to develop a visualization library for arbitrary dynamic programs in Python.
- Creates an interactive visualization of any arbitrary 1d or 2d dynamic program as it fills in the dynamic programming array.
- Library will be released on Pypi in December 2023 and will be used by future students of USC's CSCI 270.

## SKILLS

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**Languages:** Python, C++, C, Java, Matlab, R, Arduino

**Libraries:** Plotly, Matplotlib, Dash, NumPy, Tensorflow, scikit-learn, pandas, Keras, Pygame, Pyserial

**Activities:** Rock Climbing, Chess, Poker, Running, Hackathons

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\*Names are ordered alphabetically.