Kevin T. Sun

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https://kevinsun.org

Education

Duke University - Durham, NC
- PhD in Computer Science (September 2022 expected)
  - Certificate in College Teaching
- MS in Computer Science December 2020

Rutgers University - New Brunswick, NJ
- BS in Computer Science (with highest honors) May 2017
- BA in Mathematics (with honors) May 2017

Work Experience

Instructor - Department of Computer Science, Duke University Summer 2021
- Delivered all aspects of the undergraduate course in algorithms (CPS 330), including: lectures, recitation, office hours, homework, exams, managing 2 teaching assistants
- Topics included: graph algorithms, greedy algorithms, dynamic/linear programming, complexity
- Out of 21 students, 12 gave a 5/5 rating and 6 gave a 4/5 rating on how much they learned

Data Science Intern - IQVIA (Durham, NC) Summer 2019
- Designed and implemented a convolutional neural network to classify clinical trial documents
- Increased overall accuracy from 65% to 90% on over 52K documents spanning over 100 classes
- Analyzed performance and interpretability using scikit-learn, matplotlib, pandas, lime

Teaching & Activities

Graduate Fellow - The Kenan Institute for Ethics, Duke University Spring 2022
- Participated in weekly discussions on helping undergraduates flourish and grapple with questions of purpose, in the Teaching on Purpose fellowship program (awarded $3000 stipend)

Teaching Assistant - Duke University
- CPS 230: Discrete Mathematics for Computer Science Spring 2019, Spring 2020
- CPS 330: Design and Analysis of Algorithms Spring 2018, Spring 2021
- CPS 638: Graph Algorithms Fall 2019

Peer Mentor/Grader - Rutgers University
- Calculus I – III, Linear Optimization Fall 2014 – Spring 2017

Rutgers Undergraduate Mathematics Association (President) 2015 – 2017
- Invited faculty to give talks on various mathematical topics
- Organized extracurricular activities for undergraduates

Research Experience

Duke University 2017 – present
- Research focuses on improving algorithms for classical problems in theoretical computer science by augmenting them with predictions obtained from machine learning
- Prepared and delivered research talks at multiple conferences (ICALP 2020, ICALP 2021)

University of Maryland, College Park Summer 2016
- Designed theoretically best-known algorithms for scheduling tasks on computing servers
- Formally proved worst-case guarantees and published results in *Theoretical Computer Science*

Rutgers University 2015 – 2017
- Create an exploration tool (Java) for the On-Line Encyclopedia of Integer Sequences ($\approx$ 250K nodes)
- Implemented various models (Python) to analyze knowledge propagation in hypothetical fish networks

Publications

[1] Samir Khuller, Jingling Li, Pascal Sturmfels, Kevin Sun, and Prayaag Venkat. Select and permute: An improved online framework for scheduling to minimize weighted completion time. *Theor. Comput. Sci.*, 795:420–431, 2019.

[2] Zhihao Jiang, Debmalya Panigrahi, and Kevin Sun. Online algorithms for weighted paging with predictions. In Artur Czumaj, Anuj Dawar, and Emanuela Merelli, editors, *47th International Colloquium on Automata, Languages, and Programming, ICALP 2020, July 8-11, 2020, Saarbrücken, Germany (Virtual Conference)*, volume 168 of *LIPIcs*, pages 69:1–69:18. Schloss Dagstuhl - Leibniz-Zentrum für Informatik, 2020.

[3] Ruoxu Cen, Yu Cheng, Debmalya Panigrahi, and Kevin Sun. Sparsification of directed graphs via cut balance. In Nikhil Bansal, Emanuela Merelli, and James Worrell, editors, *48th International Colloquium on Automata, Languages, and Programming, ICALP 2021, July 12-16, 2021, Glasgow, Scotland (Virtual Conference)*, volume 198 of *LIPIcs*, pages 45:1–45:21. Schloss Dagstuhl - Leibniz-Zentrum für Informatik, 2021.

[4] Nathaniel Kell and Kevin Sun. Primal-dual algorithms for indivisible concave allocation with bounded local curvature. *arXiv preprint arXiv:2109.00081*, 2021.

Relevant Coursework

– At Duke: Approximation Algorithms, Artificial Intelligence, Deep Learning, Geometric Algorithms, Graph Algorithms, Linear Programming, Machine Learning, Randomized Algorithms
– At Rutgers: Data Structures, Computer Architecture, Principles of Programming Languages, Numerical Analysis, Design & Analysis of Algorithms, Formal Languages and Automata, Complexity of Computation

Awards, Fellowships, Etc.

– Duke Graduate Fellowship 2017 – 2019
– Honorable Mention, NSF Graduate Research Fellowship Program 2017
– Inducted to Phi Beta Kappa 2016
– Presidential Scholar (4-year full scholarship) at Rutgers University 2013 – 2017

Skills

– Familiar with Python, Java, LaTeX