KAI WEN WANG

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EDUCATION

Carnegie Mellon University, Pittsburgh, PA Dec 2019

- Bachelor of Science in Computer Science with an additional major in Mathematics
- Selected Coursework: Machine Learning[G], Algorithms and Data Structures, Operating Systems, Distributed Systems, Real Analysis, Convex Geometry[G], Probability, Graph Theory, Combinatorics
- Cumulative GPA: 3.96/4.00 G - graduate

RESEARCH EXPERIENCE

Research Assistant, Professor Mahadev Satyanarayanan (Satya) Sept 2019 - Dec 2019
Computer Science Department, Carnegie Mellon University, Pittsburgh, PA

- Added Hyperboard to Eureka to track, visualize and improve user productivity with edge computing. Hyperboard tracks several metrics and enables branching from and replaying previous sessions.

Research Assistant, Professor Nina Balcan Dec 2018 - Present
Machine Learning Department, Carnegie Mellon University, Pittsburgh, PA

- Co-developed the first provably accurate algorithms for learning distributed, differentially private decision trees. Performed comprehensive evaluation on real datasets.

Research Assistant, Professor Min Xu Jan 2017 - Aug 2018
Computational Biology Department, Carnegie Mellon University, Pittsburgh, PA

- Developed a Monte Carlo approach for performing hypothesis tests on CECT template matching.
- Implemented novel generative adversarial networks for 3D structures of macromolecular complexes.

INDUSTRY EXPERIENCE

Research Engineering Intern, Facebook AI Research (FAIR) May 2019 - Aug 2019
Facebook Inc., Menlo Park, CA

- Co-developed Reinforcement Learning Assembly (ReLA), a scalable platform for RL research at FAIR now the backbone of many research projects at Facebook AI, including high-quality implementations of Ape-X and R2D2. Open-sourced at https://github.com/facebookresearch/rela.

Research Intern, Datavisor Inc. May 2018 - Aug 2018
DataVisor Inc., Mountain View, CA

- Designed and implemented an automated quality monitoring algorithm for company metrics using seasonal trend decomposition based on Loess (STL). Deployed as Web app written in Express and D3.

PROJECTS

Cosmological Event Classifier, Prof. Chad Schafer (10-701 project) Mar 2018 - May 2018
Department of Statistics, Carnegie Mellon University, Pittsburgh, PA

- Developed classifier for cosmological events with 90% accuracy. Available dataset was severely biased and small, comprising of irregularly sampled magnitudes time-series data from synoptic sky surveys.

First Place at CMU's Annual Mobot Race Apr 2018, Apr 2019
School of Computer Science, Carnegie Mellon University, Pittsburgh, PA

- Built autonomous mobile robot (a.k.a. Mobot) capable of outdoors navigation.
- First place at 24th and 25th annual Mobot Race with fastest time for the past six years.

Co-author for Honours Probability Course Textbook May 2018
Mathematical Sciences Department, Carnegie Mellon University, Pittsburgh, PA

- Prepared course textbook for honours probability course (21-325) with Professor Tomasz Tkocz.
- Now used for the class: `http://www.math.cmu.edu/~ttkocz/teaching/1819/prob-notes.pdf`.

TEACHING

Teaching Assistant for 15-440/640 Distributed Systems Jan 2019 - May 2019
Computer Science Department, Carnegie Mellon University, Pittsburgh, PA

- Led recitation, held weekly office hours, created and graded homework and exam questions for CMU's Distributed Systems, a class of over 200 students, taught by Professors Satya, Pillai and Berger.

Grader for Concepts of Math Jan 2017 - May 2017
Mathematical Sciences Department, Carnegie Mellon University, Pittsburgh, PA

- Graded homeworks and exams for Concepts of Math (21-127) taught by Professor Greggory Johnson.

SERVICE

- First-year Advisory Board for CIT 2016-2017.

AWARDS

- Honorable Mention for 2020 CRA Outstanding Undergraduate Researcher Award.
- Dean's list at CMU from Fall 2016 to Spring 2019.
- Summer Undergraduate Research Fellowship 2017.

RESEARCH TALKS

- "Differentially private distributed decision tree learning", poster at CMU's Meeting of the Minds 2019.
- "Distributed RL and ReLA", 10 min talk at FAIR Reinforcement Learning Reading Group.
- "Anomaly detection for time series data with STL", 10 min talk at Datavisor's all-hands meeting.

PUBLICATIONS

- **Kai Wen Wang**, Travis Dick, and Nina Balcan, "Scalable and provably accurate algorithms for differentially private distributed decision tree learning", in *The AAAI Workshop on Privacy-Preserving Artificial Intelligence @ AAAI-20* (**Oral**, 20% acceptance).
- **Kai Wen Wang**, Xiangrui Zeng, Xiaodan Liang, Zhiguang Huo, Eric P. Xing, Min Xu, "Image-derived generative modeling of pseudo-macromolecular structures — towards statistical assessment of electron cryotomography template matching", in *British Machine Vision Conference* 2018.
- Guannan Zhao, Bo Zhou, **Kai Wen Wang**, Rui Jiang, Min Xu, "Respond-CAM: Analyzing deep models for 3D imaging data by visualizations", in *International Conference On Medical Image Computing Computer Assisted Intervention* 2018.
- Chang Liu, Xiangrui Zeng, **Kai Wen Wang**, Qiang Guo, Min Xu, "Multi-task Learning for Macromolecule Classification, Segmentation and Coarse Structural Recovery in Cryo-Tomography", in *British Machine Vision Conference* 2018.