

Yuan Chang

Portfolio: itis2010me.github.io

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EDUCATION

- **University of California, San Diego** La Jolla, California
Master of Science - Computer Science and Engineering; GPA: 3.95/4.0
Sept 2022 - June 2024
Emphasis: Artificial Intelligence, Software Engineering, Reinforcement Learning
- **University of California, Davis** Davis, California
Bachelor of Science - Computer Science; GPA: 3.9/4.0 with Honors
Sept 2018 - June 2022
Minor: Mathematics
Courses: Operating Systems, Data Structures, Analysis of Algorithms, Artificial Intelligence, Machine Learning, Scientific Computation, Computer Architecture, Optimization, Number Theory, Modern Algebra, Linear Algebra

INTERNSHIP & EXPERIENCE

- **UC Davis Applied Mathematics Summer Research** Remote
Research Student
June 2021 - Feb 2022
 - Developed automated systems that compute undiscovered mathematical constants.
 - Used symmetric breaking and optimization techniques to reduce the search space by 6x.
 - Optimized the computation to achieve almost 10x improvements in source generation.
 - Research conducted under the supervision of Prof. Jesús De Loera and William Wesley.
- **International Family Union** Remote
Teaching Associate (Part-time)
June 2020 - Jan 2021
 - Improved my student's grade in data structure course from failing to well above average.
 - Designed and taught areas such as Unix/Bash commands, C++, algorithms and abstract data structures.
 - Introduced advanced topics such as dynamic-memory management and recursion, as preparation for future courses.

PROJECTS

- **Terminal UI board-game in Haskell(Haskell, functional programming, QuickCheck, Monad)**: Implementing the TUI version of the classic board-game, Mastermind, in Haskell. Monadic and functional programming. Implemented 10 QuickCheck property testings. Github Link (2022)
- **Time Series Analysis on SNP Stock Market(Machine Learning, Data processing, Time Series Models)**: Training polynomial regression and time series models to predict the trend of the SNP stock market. Final model achieved around 90% accuracy. Project collaborated with 6 other fellow CS students, served as team leader. Produced an interactive model using Flask to output market projections. Github Link (2022)
- **Digit Recognition with MNIST Dataset of Handwritten Digits(PCA, Centroid Algorithm)**: Analyzed and implemented Centroid and PCA algorithms in MATLAB for hand-written digit recognition. Training data set over 60,000 digits and testing data set over 10,000. Achieved overall success rate of around 85%. (2022)
- **Computations with Rado numbers and degree of regularity(Automated Reasoning, Theory of Computation, Number Theory, Combinatorics)**: Advancement in terms of Rado Numbers and the degree of regularity. Discovery of nearly 500 new mathematical constants. Results collected and formulated into research paper accepted into 2022 ISAAC conference. Co-author with Prof. Jesús De Loera and William Wesley. Github Link (2021)

VOLUNTEER EXPERIENCE

- **UC Davis Undergraduate Research Conference Presentation** Davis, California
Ramsey Theory and Automatic Theorem Proving. Presentation Link.
Oct 2021
- **Teaching Assistant for Robotics Class at Davis Senior High** Davis, California
Taught essential programming paradigms through the language RobotC to a class of 30.
Sept 2019 - Dec 2019

PUBLICATIONS

- **Rado Numbers and SAT Computations (with J. A. De Loera and W. J. Wesley).**
Proceedings of the 47th International Symposium on Symbolic and Algebraic Computation (ISSAC 2022). Pages 333-342, available online at <https://dl.acm.org/doi/10.1145/3476446.3535494>.

HONORS AND AWARDS

- UC Davis L&S Dean's honor's list of W2019, F2019, W2020, S2021.
- UC Davis Provost Award and undergraduate scholarship - September, 2018

SKILLS SUMMARY

- **Languages(Proficient)**: Python, C++, L^AT_EX, MATLAB, R, Bash
- **Languages(Familiar)**: Haskell, Rust, Swift, Clisp, Prolog, Perl, Java, Maple
- **Libraries**: Scikit, TensorFlow, Keras, Seaborn, pandas, NumPy, SymPy