

Yuan Chang (Merlin)

Portfolio: [itis2010me.github](https://github.com/itis2010me)

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EDUCATION

- University of California, San Diego** La Jolla, California
Master of Science - Computer Science and Engineering; GPA: 3.97/4.0
Courses: Artificial Intelligence, Software Engineering, Reinforcement Learning, NLP, Convex Optimization
Sept 2022 - June 2024
- University of California, Davis** Davis, California
Bachelor of Science - Computer Science; GPA: 3.9/4.0 with Honors
Minor: Mathematics (Number Theory, Modern Algebra, Linear Algebra, Numerical Optimization & Scientific Computation)
Courses: Operating Systems, Data Structures, Algorithms Design, Artificial Intelligence, Machine Learning, Computer Architecture
Sept 2018 - June 2022

INTERNSHIP & EXPERIENCE

- Amazon AWS Internship** Seattle, WA (Onsite)
Software Developer Engineer (High Performance Computing group)
June 2023 - Sep 2023
 - Designed and implemented critical internal APIs that configure computing instances with cluster management and job scheduling systems.
 - Developed public API within AWS CLI to enable direct interactions of our service for customers.
 - Developed database managers which queried a single-table DynamoDB storing both cluster and node level data.
 - Simplified dependency graph within the team project and incorporated dependency injections to handle complex and nested object-oriented codebase.
 - Implemented API orchestration of APIs that simplified complex distributed workloads into a simple and seamless API invocation.
 - Incorporated unit, integration and load tests into the CI/CD production pipeline to ensure workflow validity.
 - AWS Tools involved: Lambda, DynamoDB, CDK, EC2, S3 storage, ECR.
- UC Davis Applied Mathematics Research Project** Hybrid
Research Assistant
June 2021 - Feb 2022
 - Developed automated systems that compute undiscovered mathematical constants.
 - Utilized symmetric breaking and optimization techniques to reduce the search space by 6x.
 - Optimized the computation to achieve up to 10x improvements in source generation.

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)
- 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** 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

TECHNICAL SKILLS SUMMARY

- Programming Languages:** Python, C/C++, Java, Typescript, Rust, MATLAB, R, Bash, Swift
- Libraries:** Scikit, TensorFlow, Keras, Seaborn, pandas, NumPy, SymPy, Pytorch
- Cloud service/Model/Interface:** AWS, SaaS, IaaS, Restful API, Docker