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Tae Kyu Kim

Pursing a high-impact quantitative career in Math and Computer Science.

Academic Summary

Computer Science @ Stanford University (GPA: 4.126/4.0) — Sept 2021 - Present

- Multivariable Calculus (A+), Differential Equations (A+), Linear Algebra (A+), Probability Theory (A+), Data Structures (A), Algorithms (A+), Computational Theory (A+), Mining Massive Datasets (A), Computer Systems (A+), Bayesian Statistics (A).
- Coursera: "Machine Learning" and "Deep Learning Specialization" by Andrew Ng.

Monta Vista High School in Cupertino, CA (GPA: 4.0/4.0 uw) — Aug 2017 - June 2021

Work Experience

Software Internship at Realtime Robotics — June 2022 - Sept 2022

- Create interfaces using a strong unit type system (C++ boost) for core modules of Realtime Robotics which develops state-of-the-art motion planning software for multi-robot workcells in manufacturing.
- Utilize meta-programming and template specializations to achieve zero runtime-overhead, while improving code readability and robustness in unit handling.
- Apply the new interfaces in related modules, while creating unit and backward compatibility tests and maintaining >80% test code coverage.

Research Experience

PRIMES USA by the MIT Mathematics Department — Jan 2020 - Mar 2021

- Discovered patterns in generalized Carmichael numbers by generating large numerical datasets with SageMath and Python, under the mentorship of MIT Ph.D. student Yongyi Chen.
- Presented "On Generalized Carmichael Numbers" at 2020 PRIMES conference; see https://arxiv.org/abs/2103.04883.

Advanced College-level Math at Euler Circle — Winter 2018 - Spring 2021

- Studied Measure Theory, Analytic Number Theory, Abstract Algebra, Markov Chains, Complex Analysis, etc.
- Independently wrote expository papers on related sub-areas of interest. https://taekyukim02.github.io/projects.

Machine Learning Research — 2017 - 2018

- Second-place category award and IBM award in 2018 Synopsys Championship with ML project "Context-aware Paraphrase Suggestion System using Recurrent Neural Networks with Autoencoder and Quality Classifier."

Awards and Achievements

- **International programming competition (with professionals)**
  : ACM ICPC *(16th place regional)* **'21**
  Facebook Hacker Cup: 2nd Round Qualifier (top 1.5%) **'19, '20**
  Google CodeJam: 2nd Round Qualifier (top 3%) **'19, '20**
- **Computing Olympiads**
  : USACO Platinum (Top 400 of USA students) **'18- Present**
  Stanford ProCo (5th place in advanced div.) **'19**
  Harker Programming Invitational (2nd place) **'18**
- **Math Competitions**
  : Putnam (Top 212 of undergrad math; top 7%; score: 29/120) **'21**
  5-time AIME Qualifier (Top 1% of AMC12/10) **'17, '18, '19, '20, '21**
  National winners of National Math. & Sci. Comp. **'18, '19**
- **U.S. National Physics Olympiad**
  : Top 50 Winner (top 1.4%) **'21**
  3-time Semifinalist (Top 300 of USA students) **'19, '20, '21**
- **STEM-related Summer Camps**
  : Stanford Univ. Math Camp (SUMaC): 5% acc. rate **'20**
  Ross Mathematics Program: 20% acc. rate **'18, '19**

Skillset

- C++ (STL, boost, gtest), C (gdb, valgrind, assembly), Java, Python (NumPy, SciPy, Pandas, scikit-learn, Matplotlib, SageMath, openpyxl), R, MapReduce, PySpark, vim, tmux, Jupyter Notebook, Google Colab, Unix, GitHub, Gitlab, Excel, Confluence documentation, Agile/Scrum process.
- Regression & clustering methods, random forests, ensemble methods, support vector machines, recommender systems, shallow & deep NN, Conv NN, RNN, LSTM, attention models including transformers.
- Extensive background in math, algorithms, data structures, and object-oriented programming.