Tae Kyu Kim

Pursing a high-impact career in Mathematics and Computer Science.

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Academic Summary

Majoring in Computer Science at Stanford University — Sept 2021 - Present

- GPA: 4.15/4.0
- Multivariable Calculus (A+), Differential Equations (A+), Linear Algebra (A), Proof-based Linear Algebra (A+), Data Structures (A), Computational Theory (A+).
- Coursera: "Machine Learning" by Andrew Ng.

Monta Vista High School at Cupertino, CA — Aug 2017 - June 2021

- GPA: 4.0/4.0 (unweighted).
- AP courses (all 5s): CS A, Calculus BC, Statistics, Physics 1, 2, C Mechanics, C Electromagnetism.

STEM Experiences

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

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

Research Group at Euler Circle — Oct 2019 - July 2020

- Investigated generalizations of special factoring algorithm for primes of specific forms, part of a research group mentored by Dr. Simon Rubinstein-Salzedo.
- Studied the structure of elliptic and hyperelliptic curves by reading prominent academic papers.

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

- Studied graduate-level topics in math under the guidance of Dr. Simon Rubinstein-Salzedo.
- Topics studied: Ergodic Theory, Analytic Number Theory, Cryptography, Infinite Series, Abstract Algebra, Ring Theory & Algebraic Geometry, Proofs from THE BOOK, Markov Chains, Complex Analysis
- Independently wrote an expository paper every quarter on related sub-areas of interest. My papers are listed at https://taekyukim02.github.io/projects.

Machine Learning Research — 2017 - 2018

- Second-place category award and IBM award in the 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)**
  - *Facebook Hacker Cup: 2nd Round Qualifier (top 1.5%)* — **'19, '20**
  - *Google CodeJam: 2nd Round Qualifier (top 3%)* — **'19, '20**
- **Mathematical Modeling**
  - *MathWorks Math Modeling Challenge (Honorable Mention)* — **'21**
- **USA Computing Olympiad**
  - *USACO Platinum (Top 400 of USA students)* — **'18- Present**
- **Math Competitions**
  - *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* — **'21**
  - *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

- Proficient in C/C++ (STL), Java, Python (openpyxl, SageMath, NumPy, SciPy, Pandas, scikit-learn, Matplotlib), R, vim, Jupyter Notebook, Google Colab, Unix, GitHub, Excel.
- Extensive background in math, algorithms, data structures, and object-oriented programming.
- Strong communication skills, work ethic, and dedication to high-quality, well-documented code.

Teaching Experience

- President of CalTutors, a non-profit teaching competition math and CS to middle school students. **'17- '21**
- Private tutor for HS math, physics, chemistry, and competitive programming; 9 students. **'21**
- Junior counselor at Ross mathematics program: mentor for 5 younger students over 6 weeks. **'19**