Juni C. Kim

14 High St. Demarest, NJ 07627-1607 | junikimm717@gmail.com | c. +1 (201) 725-7595

Academics

Massachusetts Institute of Technology, *Cambridge, MA*   Sep 2024 – May 2028
    Bachelor of Science

Stanford Online High School, *Redwood City, CA*   Aug 2020 – Jun 2024
    High School Diploma, GPA: 3.98/4.00 UW
    UL Courses: Real Analysis, Complex Analysis, Discrete Mathematics, Geometry of Numbers, Light & Heat, Modern Physics, Linear Algebra, Differential Equations, Multivariable Calculus

Work Experience

Software Developer Intern at **MathDash** (YCombinator W24) by Akshaj Kadaveru and Daniel Sun, *New York, NY*   Apr 2024 – Present
    Contributed improvements to the trainer and problem renderer to improve fault tolerancy

Research Experience

Research Intern at **Institute for Advanced Computational Science**, Stony Brook University   Sep 2022 – Present
    Worked under Dr. Pawel Polak, Associate Professor in the Department of Applied Mathematics and Statistics

Summer Research Program at **Garcia Center for Polymers at Engineered Interfaces**, Stony Brook University   Jul 2023 – Aug 2023
Enhanced Emotion Recognition via Deep Learning Integration with Digital Image Speckle Correlation
    Supervised by Dr. Pawel Polak and Zhikang Dong, PhD candidate.
    Implemented and tested kernelized smoothing on Digital Image Correlation Analysis.
    Tested a classifier using Digital Image Correlation displacement vectors against state-of-the-art Frame Attention Networks.

Independent Research at **Department of Computer and Information Science**, University of Pennsylvania   May 2022 – Dec 2022
Query Generators for Datasets of Interchangeable Recipe Steps
    Supervised by Alyssa Hwang, PhD candidate & Lecturer at Dept. of Computer and Information Science, University of Pennsylvania.
    Contributed a library and seed dataset for creating recipe step replacements preserving grammatical and contextual cues.

Summer Research Program at **Garcia Center for Polymers at Engineered Interfaces**, Stony Brook University   Jun 2022 – Aug 2023
Detection of (Hidden) Emotions from Videos using Muscles Movements and Face Manifold Embedding
    Supervised by Dr. Pawel Polak and Dr. Miriam Rafailovich.
    Generated and tested over 300GB of augmented ResNet models.
    Engaged in cross-disciplinary research with digital image correlation methods from material science.

Research Intern at **Institute for Exposomic Research Labs**, Icahn School of Medicine at Mount Sinai   May 2021 – Sep 2021
Establishing a Computational Screening Framework to Identify Environmental Exposures Using Untargeted GC-HRMS
    Supervised by Dr. Douglas Walker and Dr. Anna R. Robuck.
    Analyzed GC-HRMS data with R packages to identify halogenated organic compounds.
    Applied program results to test correlations between exposures and Primary Biliary Colangitis and Primary Sclerosing Colangitis.

Independent Research at **Stanford Online High School**   Apr 2021 – Nov 2021
An Analysis of Visual Subitization Across Different Modes of Peripheral Vision
    Sponsored by Stanford OHS STEAM Club.
    Used Numpy/Scipy to run statistical inferences on subitization data.
    Created a program to automatically log participant responses.

Honors & Awards

Mathematical Olympiad Program, *Blue Group Attendee*   **Jun 2023**
USA Mathematical Olympiad, *34/42, Silver Award, Ranked 23rd*   **Mar 2023**
USA Junior Mathematical Olympiad, *22/42, Winner, Ranked 22nd*   **Mar 2022**

USA Mathematical Talent Search, *74/75, Gold Medal, Ranked 7th*   Feb 2024

American Computer Science League Finals
    Senior Division, *Gold Medal*   May 2023
    Intermediate Division, *Gold Medal*   May 2021

Canadian Computing Competition Senior Division, *Top 3%*   Feb 2021
CS@Mines High School Programming Competition, *Team Leader, 2nd Place*   Feb 2021

USA Computing Olympiad, *Platinum Division*	**Jan 2021**
U.S. Physics Olympiad, *Silver Medal*	**May 2023**
U.S. National Chemistry Olympiad, *Finalist*	**Mar 2021**

Scholastic Art & Writing Awards
Critical Essay, "Artificial Intelligence in Justice System", **Gold Key**	**Dec 2023**
Critical Essay, "console.log('The Web that Won't Hold')", **Gold Key**	**Dec 2021**

National Latin Exam
Advanced Latin Prose Exam, *Gold Summa Cum Laude and Perfect Score*	Apr 2023
Intermediate Latin Exam, *Gold Summa Cum Laude*	Apr 2022
Beginning Latin Exam, *Gold Summa Cum Laude*	Apr 2021

National Classical Etymology Exam, *Gold Medal in Advanced Level*	Jan 2023
Coolidge Senators Program, *Coolidge Senators Centennial Summit Attendee*	**July 2023**
President's Volunteer Service Award, *Gold*	2023/2022/2021

Extracurriculars & Community Service

Stanford Online High School	Aug 2020 – Jun 2024

Teacher's Assistant: *Linear Algebra, Differential Equations, Multivariable Calculus, AP Calculus BC*
Peer Tutor: *AP Chemistry, AP Calculus BC, AP Statistics, AP Biology*
Math Team, *Captain & Webmaster*
    Purple Comet 2023, *Honorable Mention, 13th out of 1125 Teams*
    Admissions Questions for Stanford University Mathematics Camp, *Evaluator*

Lend a Hand Tutor A NJ Nonprofit Corporation, *Co-founder/Tutor Emeritus*	Jun 2020 – Present
Competitive Fencing, *A-Rated in Epee, Best National Ranking Point Standing (1st in U14, 13th in U17, 75th in U20)*	Nov 2014 – Present
U20 Men's Epee Regional Standing, *1st Place in Region 3*	Aug 2020 – Jul 2021
European Cadet Circuit Coup du Danube in Epee and Foil, Bratislava, Slovakia, *selected as part of Team USA*	Jan 2020
November North American Cup, Milwaukee, WI, *8th place in U17 Men's Epee*	Nov 2019

Programming Projects

PureMOOt, *Discord bot for MOP alumni community*	Aug 2023 – Present
TeXbld, *Docker-based build tool for reproducible papers*	May 2022 – Present
search.MAATester.com, *instant search engine for math olympiads*	Dec 2022 – Present
MAA Contest Tester, *React/Firebase app for math contest preparation*	Sep 2021 – Present
ohsmathc.club, *OHS Math Competition Homeroom Website*	May 2021 – May 2022
gostoptools, *series of web apps for logging/payment in Hwatu card games*	Oct 2021 – Mar 2022
problemportal, *configurable application for math problem set distribution*	Dec 2021
MkTeX, *POSIX-sh tool for paper scaffolding and compiling*	May 2021 – May 2022
mt, *configurable meeting launcher in Rust*	Nov 2021

Publications

Kim, J., Dong, Z., Polak, P., "Mapping the Invisible: Face-GPS for Facial Muscle Dynamics in Videos," 2024 IEEE First International Conference on Artificial Intelligence for Medicine, Health and Care (AIMHC), 5-7 February 2024.

Zhao, Y., Meijer, J., Walker, D. I., **Kim, J.**, Hosnijeh, F. S., Portengen, L., Vlaanderen, J., Vermeulen, R., "Dioxin(-like) related Effects on Key Characteristics of Carcinogenesis through Integrated Chemical-wide and Metabolome-wide Analyses," Environmental Science & Technology, 27 December 2023, https://doi.org/10.1021/acs.est.3c07588.

Kim, J., Dong, Z., Polak, P., "Face-GPS: A Comprehensive Technique for Quantifying Facial Muscle Dynamics in Videos," Medical Imaging Meets NeurIPS Workshop, 16 December 2023, https://drive.google.com/file/d/1zNdYylnPQRDGVTjOZBOi0w2On25bd-SV/view.

Kim, J., "The NAEL and The GOAT: Shakespeare 's Place in the Scholarly English Canon," Curieux Academic Journal, April 2023, https://www.curieuxacademicjournal.com/_files/ugd/99711c_51e8cc7c2ba94cb5a3f74baf78905c66.pdf.

Kim, J., "Query Generators for Datasets of Interchangeable Recipe Steps," 4th World Conference on Innovations in Management, Science and Engineering, Bangkok, Thailand, 29-30 December 2022, https://zenodo.org/record/8105792.

Kim, J., Dong, Z., et al., "Detection of (Hidden) Emotions from Videos using Muscles Movements and Face Manifold Embedding," arXiv, 1 November 2022, https://arxiv.org/abs/2211.00233.

Kim, J., Walker, D. I., & Robuck, A., "Establishing a Computational Screening Framework to Identify Environmental Exposures Using Untargeted GC-HRMS," IAET 2nd International Conference on Soft Computing, Artificial Intelligence, Machine Learning, Smart Materials & Information Technology (SAMI), 4 December 2021.

Kim, J., "An Analysis of Visual Subitization Across Different Modes of Peripheral Vision," International Conference on Industrial Engineering and Operations Management, Monterrey, Mexico, 3 November 2021, http://ieomsociety.org/proceedings/2021monterrey/97.pdf.

Kim, J., "The Seaweed Threatening the Atlantic," EarthPlex, 23 July 2021, https://www.earthplexmedia.com/2021/07/the-seaweed-threatening-atlantic.html.

Miscellaneous

Technical Proficiencies
 Linux (Debian, Red Hat, Arch, Alpine, NixOS), FreeBSD, Python, C++, Java, Django, pytorch, numpy, TypeScript, JavaScript, Node.JS, Express.js, React, Vue, Svelte, Firebase, MongoDB, LaTeX, Docker, PHP, Perl, POSIX sh, Go, R

Languages
 English, Korean

Sports
 Fencing