

Milo Knell

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Education

Harvey Mudd College

Aug 2021 – May 2025

B.S Computer Science and Math, concentration in economics. Member of poker club and co-founder of games club

Sequoyah High School

Sep 2017 – Jun 2021

4.0 GPA, leader of STEM institute, school treasurer, member of honor board, leader of student outreach committee, member of archery team, member of flag football team

Experience

Researcher at AMISTAD Lab

May 2022 – Jul 2022

Prof. George Montanez at Harvey Mudd College, theoretical computer science

Claremont, CA

- Proving theoretical limits on machine learning using the algorithmic search framework
- Proved bounds on when transfer learning succeeds and the tradeoff that occurs where transferring well in one problem implies transferring poorly on other problems (and extension of no free lunch to the transfer learning space)
- , Proved bounds on the minimization of regret for the exploitation-exploration tradeoff common in reinforcement learning

Software Engineer Intern at TNH Studio

Jan 2022 – Mar 2022

- Created machine learning pipeline to annotate stock photos with tags to improve searchability, including backend to handle submission and tagging. Additionally collaborated on frontend web design and SEO

Researcher at Backgammon Research Group

Nov 2021 – May 2022

Prof. Arthur Benjamin at Harvey Mudd College, combinatorics and game theory

Claremont, CA

- Optimized play for the game Backgammon. Created 3x improvement in state of the art for predicting doubling cube actions across the 40 million most common game states

Founder at Keous

May 2019 – Sep 2021

- Registered nonprofit that presents political news articles on the same topic with different perspectives to reduce political polarization
- Created state of the art machine learning model using triplet loss between headline and body texts with a strong increase over prior work in macro f1 (from 80% to 94%) in targeted sentiment analysis

Researcher at Cataclysmic Variable Stars Research Group

Jan 2019 – May 2021

Prof. Joe Patterson at Columbia University, astrophysics

Remote

- Developed data pipeline to take 20 years of original data about cataclysmic variable star system BH- Lyn and apply Fourier transformations to find superhump period, then produce O-C diagram based on minimizing entropy in sliding window

Awards

Citadel's TERMINAL Global Championship invitational – 2nd place and \$10,000 prize

Jun 2022

Harvey S Mudd Merit Scholar

Aug 2021 – May 2025

Citadel's West Coast Regional Datathon – 1st place and \$10,000 prize

Sep 2021

Dean's List at Harvey Mudd College

Jun 2022

Publications and Preprints

2021 **Knell, Milo**, "Keous: a Tool for Mitigating Media Bias using Targeted Sentiment Analysis." Pre-print available at keous.ai/paper (currently unavailable due to anonymity period for EMNLP conference)

Skills

Languages  Python  Java  C++  Racket  HTML/CSS

Frameworks  NumPy  Pandas  PyTorch  Scikit-Learn  LaTeX  Quiskit  statsmodels