Mohammad Ahmad Khan

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EDUCATION

Naperville North High School - Senior   4.644 GPA

Awards   *June 2022 Expected Graduation*

Illinois Junior Classical League Certamen: 2019-20 (State MVP) 2020-21 (State)
National Latin Exam: 2018-19 (Silver, *maxima cum laude*), 2019-20 (Gold, *summa cum laude*),
2020-21 (Silver, *maxima cum laude*)
4.0 GPA award: 2018-19, 2019-20, 2020-21
Illinois State Scholar, National Merit Scholarship Semifinalist

College of Dupage Dual Enrollment   *2020-21*

Calculus and Analytic Geometry III (MATH 2233 / 2235 DC301)
Linear Algebra (MATH-2245-DC301)

University of Illinois at Urbana-Champaign Dual Enrollment   *Current*

Differential Equations Plus (MATH 286)

EMPLOYMENT

HSOP Intern at Furche Research Group, University of California Irvine   Current

Researching Kasha's rule in the field of non-adiabatic molecular dynamics utilizing computational methods to simulate and analyze molecular motion and interaction. Working with Linux systems and bash scripts to interact with computer banks at UCI to perform necessary calculations and analyses.

Student Representative on the Transportation Advisory Board   2020-Present
to the Naperville City Council

Bringing the student perspective to meetings regarding various transportation issues and initiatives around Naperville.

SEAP Intern at Naval Surface Warfare Center, Crane, IN   Summer 2021

Worked with Jackal UGV autonomous robots to defuse simulated IEDs. ROS and Python were used for training image recognition and path planning models that allowed the robot to operate in completely randomized terrain. Programs were stored and updated in a GitHub repository, and were moved to the robot's Linux system using SFTP and SSH protocols. My team won the Director's Cup, which was the final competition at the end of the internship.

COURSE HIGHLIGHTS:

Ongoing:
- Differential Equations Plus
- AP Physics 2
- Anatomy and Physiology

Completed:
- Calculus and Analytic Geometry III
- Vector Calculus
- Linear Algebra
- AP Calculus BC (AOPS)
- AP Chemistry

- Advanced Chemistry
- Organic Chemistry (JPH Chemistry Olympiad
- AP Biology
- AP Physics 1
- AP Physics C
- Music Theory

SKILLS + EXPERIENCE

Computer Science: Python (scikit-learn, pandas, numpy, rdkit, pygame), Javascript, HTML/CSS, Linux, ROS
Software: Inkscape, FL Studio, Github
Languages: Introductory German and Latin
Other skills:

- 2.5 years of chemistry education, in addition to self directed study (including organic chemistry)
- Trading stocks, options, and cryptocurrencies
- Amateur graphic design
- Tutoring and managing bootcamps
- Working with and leading teams

PERSONAL PROJECTS

Machine Learning for the Prediction of Chemical Toxicity   *Fall 2020 - Spring 2021*

Using Structural Alert Data

- Adapted machine learning models to include structural alert (functional group) data with Jupyter and Colab (GitHub) and wrote a scientific paper on findings
- Utilized Pandas and RDKit for vectorized representations of functional groups present in molecules
- Worked on implementing a neural network model to enhance LD50 value predictions
- Project won a gold medal at the Illinois Junior Academy of Science State Fair

Rhythm Game   *Winter 2020 - Present*

- Managing a team to create a DDR-style rhythm game
- Responsible for digital artwork and written content

EXTRACURRICULARS + ACTIVITIES

Naperville North Computer Science Club   *Spring 2021 - Present*

- AI/ML Subteam lead, responsible for creating and guiding club members through lessons

Naperville North High School Math Team   *Fall 2018 - Present*

- Part of a team that won first place at the state competition, competing in math-related tests.

Naperville North High School Science Olympiad Team   *Fall 2018 - Present*

- Part of a team that competed in various events related to scientific principles, winning first at the regional competition.

Naperville North High School Certamen Team   *Fall 2018 - Present*

- Learning and practicing classics knowledge in a quizbowl-format competition.
- Managing the team (team captain).
- Named State MVP in 2020, won at regionals and advanced to state in 2021.

Naperville North High School Latin Club   *Fall 2018 - Present*

- As an Officer, created and ran activities for the members of Latin Club.
- Spread awareness and knowledge of classical civilization in a fun and engaging manner.

Naperville North High School Science Bowl Team   *Fall 2019 - Present*

- Part of a team that won first, second, and third place at the regional competition, competing in a quizbowl competition about various science topics.

Dr. Rubin's Mini Medical School   *Winter 2019*

- Learned about a variety of medical professions and procedures through lectures and first-hand experiences.

Northwestern Medicine Discovery Program   *Fall 2020 - Winter 2021*

- Exposure to a variety of health-related fields through lectures and hands-on projects, in addition to volunteering at Project C.U.R.E.

Hacktoberfest 2020   *Fall 2020*

- Contributed to a variety of open-source projects on GitHub.