**Alex Gan**

6802 Lumsden Street, Mclean, VA

Alexgan2026@gmail.com | 703-231-0235

**EDUCATION**

**McLean High School**, McLean, VA

**GPA**: **Weighted 4.646/4.0**

SAT 1520 ACT 34.25

（16 end of Junior year, 23 end of Senior year) APs and Advanced Courses

**RESEARCH EXPERIENCE**

**Aspiring Scientists Summer Internship Program (ASSIP)**

Analyzed the benefits, industrial organization, and validity of account abstraction in cryptocurrency transactions with Dr. Li Jiasun. 6/2025–8/2025. Published on Journal of Student-Scientists’ Research 10/24/2024 [Vol. 6 (2024)](https://journals.gmu.edu/jssr/issue/view/284) Department of Finance, Costello College of Business, George Mason University, Fairfax, VA

**Aspiring Scientists Summer Internship Program (ASSIP)**

Analyzed trends in public Open-Source Software projects on cryptocurrencies, decentralized applications, and web 2.0 businesses using SQL and Python with Dr. Li Jiasun . 6/2024–8/2024. Published on Journal of Student-Scientists’ Research 10/24/2025 [Vol. 6 (2025)](https://journals.gmu.edu/jssr/issue/view/284) Department of Finance, Costello College of Business, George Mason University, Fairfax, VA

**Correlation of Air Pollution with Population Density and Traffic Conditions Using Google Earth Engine and Predictive Model: Insights into Urban Development Trends** National Science Fair 2024–Present

Conducted data analysis using Google Earth Engine to explore the relationship between population density and NO₂ pollution. Implemented a machine learning model (XGBoost) that predicts NO₂ levels to validate scalable and reproducible air quality monitoring.

**Spatio-Temporal Prediction of County-Level NO2 in the DMV Region Using Satellite Data and Machine Learning**

Conducted further research on the topic and combined findings with Spatio-temporal prediction using machine learning to help fill sparse datasets in areas lacking satellite coverage or affected by cloud-related data gaps

**[Publication in peer-reviewed journal]**

**World Bank Poverty Research**

Ongoing research that analyzes the changes in homelessness in Fairfax County, Virginia, before and after the COVID-19 pandemic, and contextualizes these changes using global poverty trends.

**AP Seminar Research**

* The Economic Implications of Platform Decay- Conducted research of the economic reasons and implications for platform decay. Determined that a major cause for the degradation of an online platform’s services is shareholder primacy, ultimately impacting consumers and industries.
* Social Media’s Influence on US Politics- Analyzed social media’s benefits and drawbacks to US politics. Determined that although social media provides a platform where anyone can spread awareness and advocate for causes, social media ultimately spreads misinformation and significantly contributes to political polarization.

**STEM Projects**

* **Smart Farm** Uses autonomous drones to detect and predict the total amount of crop yield in a farm. 2025-Present
* **Biotica**  Biotica is an AI-powered mobile app that analyzes skin lesions in livestock to diagnose bacterial infections and recommend antibiotics only when necessary. [Conrad Challenge, Diamond Challenge] 2022-2023
* **SmartLearning** SmartLearning is an AI-powered online education platform that delivers personalized, high-quality learning tailored to each student’s needs and style. Using advanced NLP and machine learning, it provides interactive support across core subjects to make education more accessible and effective worldwide. [Diamond Challenge] 2023-2024
* **Magic Mirror**  AI-powered smart mirror that provides real-time skin analysis and personalized skincare recommendations based on evolving skin conditions. Combining machine learning and advanced imaging, it offers tailored routines through an easy-to-use interface, empowering users—especially teens and young adults—with expert insights for healthier skin. 2024-2025
* **AgriVision** AgriVision is an autonomous agricultural robot that uses hyperspectral imaging and deep learning to detect early signs of crop disease and malnutrition. Unlike traditional methods, it provides real-time, on-site diagnostics to reduce food waste and address global agricultural losses. 2024-Present
* **Predictive Modeling in Finance Using Machine Learning**  Developed a Python-based AI model to predict financial performance trends, gaining experience in time series analysis, machine learning algorithms, and economic data interpretation. 6/2023-8/2023

**Leadership & Initiatives**

**FarmNest Initiative**  1/2025-Present

* Developing a Website for Amish farmers to sell their product to local residents, giving farmers a direct to consumer platform, reducing reliance on intermediaries, and allowing residents to access fresh, seasonal farm products, Current clients include Durgen Orchards LLC, WoodCrest, and various local stores.

**FOOD SHELTER INITIATIVE**

* The Food Lounge VA Branch Founder/President (2024 - Present) Organized donations and community service initiatives. Conducted activities ranging from STEM education to basketball in local shelters for kids.
* Small things matters VA Branch Co-Founder/President (2024 - Present) Organized weekly donations of over 200 food bags with sandwiches, fruits, water, and snacks for local homeless shelters
* AYLUS VA Fairfax Branch Secretary (2022 - Present) Organized community service events related to community clean up, donations, and fundraising.

**Extracurricular Activities**

* **Swimming** Year-round swimmer since 2015; 3 years on the McLean High School Varsity Swim and Dive Team. (2023 - Present)
* **First Tech Challenge** Co-Founder/Co-Captain of the Double Quarter Pounders team. Led a rookie team to state finals in two years. Mentored students in robot building and programming. Organized and taught a week long robotics summer camp for 3rd to 8th graders. Taught students how to design, build, and program an entire robot from scratch. Raised 3K through this camp to support the FTC team. Organized numerous outreach events to spread STEM around the community. (2021-Present)
* **RoboReach** Co-Founder of RoboReach, Organized and taught a week long robotics summer camp for 3rd to 8th graders. Taught students how to design, build, and program an entire robot from scratch. Raised 3K through this camp to support the FTC team. Organized fund raising through Chiplee sale and community contributions, baking sale, Organized numerous outreach events to spread STEM around the community. (2021-Present)
* **Mclean High School Investment Club Founder/Co President, McFinance for WGHS Competition team lead.** Directed a team in a global investment competition, collaborating with peers and professionals. Cultivated expertise in financial analysis and leadership. The Investment Club has grown to over 100 registered members within three years. Taught financial literacy, economic news, and investment strategies. (2022 - Present)
* **2025 Harvard Undergraduate Ventures–TECH Summer Program** During the six-week Harvard Undergraduate Ventures‑TECH Summer Program (HUVTSP), I interned remotely with a VC‑backed startup—working directly with founders and Harvard faculty mentors to conduct market research, develop product prototypes, and contribute to go‑to‑market strategy during an immersive, innovation‑driven experience. (6/9/2025 -7/18/2025)
* **SASA [STEM Association for STEM Advocacy] National Advocacy Conference 2025** Met Representatives’ and Senators’ teams to advocate for increased STEM Advocacy. Proposed that 0.25% of all Department of Defense Contract funds should be designated for STEM programs and fundings.**(**6/22/2025-6/24/2025)
* **Python Pals**. Developed Python skillset. Competed in a 12 hour school run hackathon and created a tower defense game. (2024-2025)

**Awards and Recognitions**

**First Tech Challenge** 2022–Present

**FTC #23928 FTC** Carolina International Premier Event Champion, Winning alliance captain. Maryland Tech Invitational Invitee (international invitational competition, only two teams from VA invited. The top 5 teams this season from all over the world were there. Ranked #15). Chesapeake championship runner up (State level competition, 50 teams from Maryland, Virginia, and Washington D.C. competed), Innovation Award, Regional Winning Alliance, Inspire, Control, Connect Awards (2025);

**FTC #23928** Inspire, Control, Innovate, Motivate Award (2024).

**FTC #19670** Inspire, Control, Innovate, Design Award, regional winning alliance captain (2023)

**FTC #15167** Chesapeake FTC Championship Division Finalist Alliance Captain (state level competition with teams from Maryland, Virginia, and Washington DC), Innovation Award (2022)

**VA Regional Science Fair** Grand Prize Nominee, First Prize in 2025, Advanced to state competition. Invited to present at the Virginia Regional Junior Science and Humanities Symposium (Oral presentation)

**American Invitational Mathematics Examination (AIME) | Qualifier** 2023

**Diamond Challenge advanced to Pitching Round 2024**.**(Smart Learning)** - Team Lead. Developed an online learning platform startup concept that implemented artificial intelligence to adjust to a student’s need.

**Conrad Innovator 2022 (Biotecha)** - Team Lead. Developed a startup concept which utilized an AI powered mobile app to detect diseases in livestock.

**SKILLS: Programming Languages**: Python, Java, JavaScript, HTML, CSS, MATLAB, R, SQL, CAD

**Technical Skills**: Data Structures,Pandas, scikit-learn, TensorFlow, NumPy, Matplotlib, Keras.

**Interests**: Swimming, Cooking.