

University of Pennsylvania Writing Supplement

Writing Questions

Penn Main Essay 1

I held my breath as my trembling fingers made for the enter key, my eyes glued to the screen savoring every moment. In a split of a second, the results of my sleepless nights were imprinted on the screen.

>>>syntax error

I felt my eyes became watery but I quickly forged a smile convincing myself I wasn't about to cry. It was my first interaction with logical programming!

As much as I felt disappointment and despair, I had a weird urge to go on the entire night until I came up with a solution. People who know me personally can attest that normally, I would be frustrated at a code not running after several attempts and would leave it on hold which had left some of my projects unfinished. So what was so special tonight that I stayed the entire night struggling to write long lines of code and teach myself python instead of catching up on the latest series like my friends? I also failed to understand it, but something about being able to express my creative solutions to problems using an unambiguous language that a machine could also understand and transform it into intelligent actions felt unusually rewarding after the code finally ran.

I choose Computer Science at Penn's School of Engineering and Applied Science because of its unique curriculum that's integrated with classes such as CIS 350 - Software Design/Engineering which will enable me to explore advanced software paradigms thus broadening my problem solving capacity using code, especially in ensuring I meet consumer needs. Nevertheless, I thrive best learning in a hands-on collaborative environment and thus the programs at the General Robotics Automation Sensing and Perception (GRASP) lab focusing on aerial robotics development will provide me with a flexible learning space to widely explore the technical aspect of developing hardware to ensure the software I design are compatible for different devices.

The above would lead me into taking part in Prof. Oleg Sokolsky's current ongoing SPARCS (Synthesis of Platform-aware Attack-Resilient Control Systems) research project at PRECISE (Penn Research In Embedded Computing and Integrated Systems Engineering) Center which aims at developing resilient control systems for autonomous vehicles. What I find unparalleled about this program is how it blends together programming, hardware development and network systems to create self-controlled vehicle models which will give me an all-round approach in creating digital solutions. Moreover, it will also open a bridge for me to participate in the annual F1tenth race competition which champions team-work and thus providing me with diverse approach to solutions when I'm stuck and form bonds with a community with whom we share interests. All these will be a way of gaining hands on experience in not only the intricacies of Software development but have related studies that would fulfill my quest of developing encompassed computing based solutions.

Penn Main Essay 2

Girls in Engineering and Related Sciences (GEARS) program is among the main reasons I want to join Penn's Society of Women Engineers. Coming from a very patriarchal society, I had very limited opportunities to express interest in a field I really loved. Moreover, being a First Generation female in STEM from my family, I never really had a mentor-figure.

Through GEARS, I look forward to interacting with high school girls from across Philadelphia and sharing with them the beauty of STEM. Being a guide and inspiration to them as they develop their interests in engineering; not barred

by their gender is a privilege I didn't experience and I'm glad for the opportunity SWE is opening for these students.

Nevertheless, the society's diverse membership is something that will enable me to really fit in a multicultural community with peers from different backgrounds and with whom I can freely share with ideas. From the numerous networking opportunities with professionals in my related field through forums like The Amazon Robotics Tech Talk to the informal setting during The SWE Corporate Dinner, I not only plan on molding my career path and connecting with peers from all over Philadelphia, but I also use these unlimited interaction opportunities in marketing the club to potential new members and partners!

Resume

Uploaded document attached

PREVIEW

EDUCATIONAL BACKGROUND

Alliance Girls' High School: 2015-2018

Unweighted GPA: 82/84

Class rank: 1/384

SAT Evidence Based Reading and Writing: 650

SAT Math: 720

SAT Essay Reading-6 Analysis-5 Writing-6

Math level 1: 680 Biology-E: 650 Physics: 650

ACTIVITIES**1.Engineering Dream Africa – African Leadership University (2019 January – 2019 June).**

Participated in a 6 month research project with the university's school of Engineering, Department of Computer science focusing on integration of Artificial Intelligence in the learning environment under Prof Andrew Nero. Built the modified Tongue Cursor used by physically impaired students to improvise independence in education. Compared to the original version, it's cheaper, more accurate and smaller therefore can be used with the jaws closed. It also has a special mode for playing games. The project was recognized amongst the 4 finalists from 30 nominees for the Top Innovation in Special Education by UNESCO at The World Heritage Centre, Paris; Came fourth in the Final Awards Ceremony.

2. Kenyatta Research Foundation – Jomo Kenyatta University of Agriculture and Technology (JKUAT) 2019 September – To date

Interned as a Research assistant to Prof John Olouch of Jomo Kenyatta University of Agriculture and Technology (JKUAT) Faculty of Financial Engineering, currently researching on Computational models for Actuarial gains and losses.

Invited as a delegate to the 'Strathmore University National Mathematics Conference' under the "Algorithm and Computing" category.

3. STEM WEEKEND Challenge – Engineering Lab Africa (June –July 2016)

Came up with the ED-Tech Hack; a low cost educational video game to deliver non formal education to children in refugee camps and community centers. Through its online user sign up system, it collects intelligent data such as the children's Name, Age, year of displacement, and other pertinent information. It was adopted by UNICEF and Raspberry Pi Foundation to collect data to plan target solutions for the communities whilst delivering non formal education.

4. IT Mentor 'Kwa Maendeleo' Vocational Training Camp(2019 July/August)

"Kwa Maendeleo" Foundation is a non-profit organization whose main objective is to use technology in providing alternative learning opportunities for students in underprivileged and special schools.

I partnered with Prof Nero as an IT instructor in the camp and I teach programming to the youths enrolled in the camp. I also train teachers from special schools to use the tongue cursor to help them coach students with physical impairments.

I received the National Certificate of Excellence from President Uhuru Kenyatta during the launching of the project.

5. Project Director; The Seeding-bot – Engineering Lab Africa Summer Program (April 2018-June 2018)

Constructed an automated drone that would assist local farmers from the rural areas in large scale plantation of seeds. The project emerged third in the Eastern Africa Science and Engineering Fair. The drone has been adopted IBM Research Centre Africa who are researching on improving the efficiency to a sustainable level.

It was also adopted by the government as a means of aerial reforestation to restore the Mau forest which had been destroyed by wildfire and thus a water source lost to residents in the Mau escarpments.

6. 2018 Innovate Kenya Finalist ; In Challenge – Global minimum (The Seeding-bot) (June)

Participated in the In-Challenge through the Seeding-bot and my team was selected amongst the 15 Innovate Kenya Finalist from 400 competitors and admitted into the 1 week Innovation August camp where we had design thinking workshops, leadership clinics and 500 US dollars for a more efficient reconstruction of the drone.

7. Golden Climate International Environmental Project Olympiad (2018 August)

Contested with the Seeding-bot at the Golden Climate International Environmental Project Olympiad and won the Wangari Maathai Special Award for best in all categories.

8.Zalego Institute of Technology (2018 November – December 2018)

Won a scholarship to enroll into the Zalego Institute After school program from which I learnt the basics of joint and robot level programming.

Programmed "Zuri", a virtual telepresence robot using Raspberry Pi. The project was adapted by the County Government to help survey the extent of destruction of the Mau Forest.

Won the University Of Nairobi Annual National Hackathon out of the 46 participants.

9. Code Academy, w3 schools and Edx(2015 July –September 2018)

Took online courses on Web Development using HTML, CSS and SQL for database backend and, further studied the following programming languages; Python, Java and JavaScript.

Developed a web application using bootstrap and Flask framework.

10.IT assistant and Facilities Prefect(2015 September-2016 November)

Developed a simple library system using Python Flask framework and postgresql to help the library technician in effective and easier distribution of book.

Resume

Piloted the use of Computer Aided Learning in the school teaching curriculum to aid in the learning of Mathematics for 12th grade students

11. Founder Robotics Club– High School (2016 September – November 2018)

Sourced funds from Samsung Engineering Academy and The Philips Africa Research & Innovation Hub to run the club programs and refurbish our IT laboratory with ultra-modern computers that could support the projects the club undertook

Gold medalist in the 2017 National Robotics Week Contest for the “Tea Harvesting Drone” .

12. Math Club Secretary General (2017 November – 2018 November)

Introduced the Math Champion Weekend program where students could volunteer and tutor fellow students on a preselected topic.

Won the Mau Regional Olympiad Fair.

Persuaded the school administration and for the first time the club was funded to participate in the National Math Olympiad contest of which I ranked fifth.

Bronze Medalist in the Pan -African Mathematics Olympiad in Morocco.

Qualified for the international math Olympiad in Romania in which I was first in the African Team.

13. Captain for the school cross-country team and part of the Regional Teen Athletics Team .(September 2017-November 2018)

Organized the Support Fee Charity Marathon which raised funds approximately equivalent to 63,000 US dollars to fund school fee bursaries for some of the students in the school.

5th in the Annual Standard Chartered Marathon.

HONORS AND AWARDS

- **Finalist at 13th Edition IndabaX teens in AI Africa Hackathon.**
- **Finalist for Top Innovation in Special Education Award – UNESCO, World Heritage Centre 2018.**
- **Wangari Maathai Special award – Golden Climate International Environmental Project Olympiad 2018.**
- **Innovate Kenya 2018 August finalist Global Minimum Inc.**
- **8th out of 615,773 candidates 2017 KCPE.**
- **Third place Engineering – Eastern Africa Science and Engineering Fair 2018.**
- **Fifth place Kenya National Mathematics Olympiad.**
- **First place University of Nairobi National Hackathon,2017**
- **Presidential Scholarship winner,2016**
- **1st/384 Alliance Girls’ High School Class of 2018**