

## EDUCATION

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- **Applied Technology School for Nuclear Energy** El-Dabaa, Matrouh, Egypt  
*Nuclear Electronics Department; Unweighted GPA: 97.5/100; Class Rank: 4/60* Oct. 2021–Present
  - **Relevant coursework:** Nuclear Engineering, Linear Algebra, Multivariable Calculus, Radiation Protection, Reactor Theory & Physics, Computational Nuclear Instrumentation, Logic Design, Robotics, Electric Circuits, and Radiological Physics

## EXPERIENCE

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- **Storiza Group** Remote  
*Founder & Backend Systems Engineer* May 2022–Present
  - Developed backend microservices with **Java Spring Boot**, **PostgreSQL**, and **Redis**; optimized performance through caching, concurrency management, and asynchronous pipelines.
  - Engineered a scalable containerized hosting platform using **Kubernetes** and **CEPH distributed file systems**, enabling reliable multi-tenant deployment for clients.
  - **Host and manage over 100 VPS instances supporting 170+ applications**, applying expertise in **Linux** systems, **FUSE** file operations, kernel optimization, and advanced networking.
  - **Built a reseller ecosystem of 30+ representatives, delivered 20+ custom development services, and maintained engagement exceeding 200+ impressions** through automated newsletters.
- **Pioneer Academics** Jenkintown, PA, United States  
*Research Intern in Computer Vision* Feb 2025–Aug 2025
  - Conducted research on **low-cost robotics navigation using computer vision** under Macalester College Professor **Susan Fox**.
  - Designed and implemented **vision-based SLAM algorithms** integrating **OpenCV**, **Python**, and **ROS** for autonomous mapping.
  - Analyzed performance trade-offs between **monocular depth estimation** and **stereo-based mapping** for real-world robotic applications.
  - Completed the **INST 099 Research Course** with **4 college credits** accredited by **Oberlin College**, and selected as a **Pioneer Journal '25 Candidate**.
- **Arab Mediators (Wassatā Al-Arab)** Remote  
*Co-Founder & Mediator Supervisor & Head of Programming Team* Feb 2021–July 2023
  - **Supervised a 20-member mediation team** within an **80K-member Discord community**, ensuring transparent and efficient conflict resolution.
  - Mediated **500+ software and design transactions** valued at over **\$22K**, maintaining a verified record of successful agreements.
  - Developed a **custom ticketing system** managing **5K+ support cases** using **Node.js**, **Discord API**, and automation frameworks.
- **Youth Science Journal (YSJ)** Remote  
*Senior Research Mentor & Lecturer in Robotics* Aug 2024–Nov 2024
  - **Mentored 8 students** in robotics research through the YSJ Research Program, guiding them from ideation to publication readiness.
  - Instructed **20 lectures** on applied robotics, computer vision, and algorithmic design, fostering analytical and experimental thinking.
  - Guided on **research proposals, paper drafting, and peer review**, ensuring adherence to academic standards and publication quality.
  - Integrated **Python**, **Arduino**, and **ROS** tools into project workflows to demonstrate robotics concepts and automation techniques.
- **ATSNEE Tech Innovation Council** El-Dabaa, Matrouh, Egypt  
*Founder, President & Instructor* Jan 2024–Present

- Founded and directed a student-led council advancing **technological innovation** and **research**.
- **Coordinated two cohorts across 24 lectures with a 95% attendance rate**, mentoring **20+ peers** in applied **STEM projects**.
- Delivered **8 sessions** and facilitated collaborative problem-solving in **coding** and **engineering**.
- Organized informational workshops on **ISEF participation** and **competitive programming** opportunities.

### • Competitive College Club (CCC)

Alexandria, Egypt

*2025 Cohort Member*

*May 2025–Present*

- Selected for the **prestigious CCC advising program** supporting high-achieving students in U.S. college admissions.
- Participated in the **Standardized Testing Sub-Club**, engaging in **mock exams**, and academic workshops.
- Collaborated with **motivated peers** to foster academic growth within a dynamic and supportive learning environment.
- Explored **U.S. higher education systems**, scholarship opportunities, and personalized college application strategies through CCC's holistic mentorship approach.

### • Massaya Photography & Editing Studio

Mersa Matrouh, Matrouh, Egypt

*Trainee*

*May 2021–Sep 2023*

- Edited and enhanced visual media for **20+ events**, applying professional-grade post-production standards.
- Designed **5 full brand identities** integrating cohesive typography, color theory, and logo systems.
- **Managed a Facebook page of 1K+ followers**, curating digital content to increase client engagement and reach.

## PROJECTS

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- **Autonomous Drone for Radiation Monitoring:** Built an AI-powered drone for **automated radiation workplace monitoring**, utilizing **monocular depth estimation** for navigation. Designed deep learning-based **vision-based path planning** to avoid LiDAR interference from gamma radiation.
- **Semi-Supervised Metric-Scaled Monocular 3D Perception Framework:** Developed a **novel semi-supervised framework** combining **visual-inertial odometry (VIO)** and **self-supervised deep learning** for monocular depth estimation. Implemented using **Python, PyTorch, and ROS**, the system achieved **90.6% accuracy** on the KITTI dataset, enabling **metric-scale 3D perception** on low-cost autonomous platforms without LiDAR or labeled data.
- **Plasma Knights:** Developed a **machine learning framework** to **predict and analyze magnetic reconnection phenomena** in space plasmas, achieving **90% predictive accuracy** through **coordinate and LMN based analytical tests** that enhance physical interpretation.
- **ATSNEE School Website:** Designed and developed a responsive website for my school using **Next.js, Tailwind CSS, and Payload CMS**. Applied accessibility and user experience principles, enhancing usability for all visitors. The platform has reached **5,000+ visitors**, including prospective students and parents.
- **Sell4spot:** Built a digital marketplace platform enabling users to buy and sell second-hand items. Developed using the **MERN stack (MongoDB, Express.js, React.js, Node.js)**, featuring **advanced search and explore capabilities**, a **high-availability real-time chat system**, and handling **1,500 active users** with secure authentication and payment integration.
- **Botify:** Developed a **multi-tenant platform** for creating and managing **custom-designed Discord bots**. Built with **Node.js, MongoDB, gRPC, and WebSockets**, enabling high concurrency and scalability, and successfully **deployed and maintained 50+ stable bots** across multiple communities.
- **Botify:** Developed a **multi-tenant platform** for creating and managing **custom-designed Discord bots**. Built with **Node.js, MongoDB, gRPC, and WebSockets**, enabling high concurrency and scalability, and successfully **deployed and maintained 50+ stable bots** across multiple communities.
- **Wastaa Al-Arab Website:** Developed a responsive website using **React.js** and **Chakra UI**, featuring **modern UI design, API integration, and optimized performance** for seamless user experience.

## AWARDS

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- **ISEF (International Science and Engineering Fair):** Achieved *Grand Award #2 out of 2500 participants at Biboletica Alexandrina Science and Engineering Fair 2025*, earning a **Gold Medal in Computer Systems**, and representing Egypt internationally.
- **NASA Space Apps Challenge:** Ranked *#1 out of 800 competitors as Global Nominee at NASA Space Apps Alexandria 2023* and placed in the **top 4.5% out of 12,500 international projects** at the **NASA International Space Apps 2023**.
- **Pioneer Academics Research Program '25:** Ranked in the **top 8% among approximately 1,350 research papers** and **nominated for publication** in the Pioneer Research Journal 2025.
- **International Math Bowl (IMB):** Ranked **#1 in Egypt and Africa** and placed in the **top 1% among 1,100 international teams**.
- **ECPC Teens (Egyptian Collegiate Programming Contest):** Ranked in the **top 5% among 1400 teams** at the 2024 competition.
- **Purple Comet International Math Contest'23:** Ranked in the **top 10% internationally** among participating teams.
- **IEEE Innovation Competition 2024:** Finalist among **500 international projects**.
- **International Telecom Conference (ITC Egypt)'25:** Finalist among **1400 projects**, recognized for innovation in robotics and embedded systems.

## PROGRAMMING SKILLS

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- **Software Development:** Python, Java, C++, C, Rust, JavaScript, React.js, Next.js, React Native, Electron, Git, PostgreSQL, MongoDB, Redis.
- **Artificial Intelligence & Data Science:** TensorFlow, PyTorch, Keras, Pandas, NumPy, SciPy, Seaborn, OpenCV, MATLAB.
- **Robotics & Embedded Systems:** ROS, RViz, Arduino, microcontrollers, PCB design (Altium Designer), hardware integration, automation systems.
- **Systems & Networking:** Linux, operating systems, networking, containerization (Kubernetes, Docker), distributed systems.
- **Design & Productivity:** LaTeX, Adobe Photoshop, Illustrator, Excel, PowerPoint, Canva, Slack, Jira, Notion.

## COURSES

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- **Machine Learning (Stanford University, Coursera):** Studied supervised and unsupervised learning, model evaluation, and neural networks using Python and NumPy.
- **BLAST AI Course – Applied Artificial Intelligence:** Gained experience implementing real-world AI applications in computer vision, NLP, and reinforcement learning.
- **Python for Everybody (University of Michigan, Coursera):** Developed practical programming skills in Python including data handling, APIs, and object-oriented design.
- **Frontend Development (Meta, Coursera):** Learned responsive web design, component-based UI development, and software deployment workflows.
- **Mastering Data Structures & Algorithms Using C and C++:** Built algorithmic problem-solving skills covering recursion, sorting, trees, graphs, and dynamic programming.
- **Mastering 4 Critical Skills Using C++17:** Strengthened understanding of modern C++ programming, templates, memory management, and multithreading concepts.