

YOUSEF SHERIF

Competitive Programmer · Innovator

EXTRACURRICULAR ACTIVITY PORTFOLIO

All courses, activities, and competitions are documented with certificates. Each entry below includes a QR code — scan it to open the certificate or proof online. The short web address is printed underneath for manual entry if scanning isn't possible.

7+ Years of Coding	20+ National & Intl. Competitions	5+ Engineering Projects	50+ Students Mentored	60+ Courses & Skills
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COMPETITIVE PROGRAMMING

Competitive programming is at the core of Yousef's identity as a technologist. Beginning at age 11, he self-taught C++ and entered Egypt's most selective national programming contests — competing against students years older than him. The breadth and caliber of competitions below are rare even among university students, let alone high schoolers.

Competitive Programming — 6 Years of Dedicated Practice

Competitive programming is the sport of solving complex algorithmic problems under strict time pressure, competing live against thousands of programmers worldwide. It demands mastery of advanced mathematics, data structures, algorithms, and the ability to think clearly and precisely when it matters most. Unlike standard coding, competitive programming trains the mind to decompose any problem — technical or real-world — into its core logic and solve it efficiently. The skills it builds go far beyond code: critical thinking, pattern recognition, working under pressure, and approaching every challenge as a solvable puzzle.

I have been competing seriously since the age of 11 — over 6 years of consistent, self-driven practice that has fundamentally shaped how I think.

Codeforces Profile — Pupil Rank

Note to reviewer: the Codeforces profile link in the original source file is incomplete ("codeforces.com/profile/Turbo....") — please provide the full handle so a working QR code / link can be added here.

Codeforces is the world's largest and most respected competitive programming platform, used by over 1 million programmers globally — from university students to engineers at Google, Meta, and top tech companies worldwide. Its rating system works like chess ELO: every contest is a live ranked battle against thousands of competitors worldwide, and your rating rises or falls based purely on performance. There is no shortcut and no luck — only skill.

The rating ranks are, in order: Newbie → Pupil → Specialist → Expert → Candidate Master → Master → International Master → Grandmaster → International Grandmaster → Legendary Grandmaster.

What makes a Codeforces rating meaningful is not just the rank itself — it is what it represents: hundreds of hours of deliberate practice, dozens of live contests competed against programmers from Russia, China, Poland, and every major tech nation in the world, and a profile that objectively documents 6 continuous years of algorithmic growth. The median active Codeforces user never advances past Newbie. Reaching and maintaining Pupil rank across 6 years of active competition, while simultaneously qualifying for national olympiads and onsite finals, tells a story that a GPA alone never could.

IOI National Qualifier — Egypt (2021)

One of the defining moments of my competitive programming journey was qualifying for the Egyptian Olympiad in Informatics (EOI) elimination round in 2021 — the final stage of Egypt's selection process for the International Olympiad in Informatics (IOI), the most prestigious computer science competition in the world for school students. Out of thousands of Egyptian students, only the Top 60 are invited to this onsite stage. From those 60, a panel selects just 4 students to represent all of Egypt internationally. I was among those 60. At the age of 15, I competed in multi-day onsite elimination rounds against the best young programmers in the country, fighting for a spot on the national team. Reaching that stage — regardless of the final 4 selected — is a milestone that fewer than 0.01% of Egyptian students ever achieve.

What 6 Years of Competitive Programming Built in Me

Beyond rankings and trophies, competitive programming has been the single greatest teacher of my life. It taught me that every problem — no matter how complex — has structure, and that structure can be found if you think clearly enough. It made me a genuine problem-solver: someone who doesn't panic when facing something unfamiliar, but instead breaks it down, identifies patterns, and works methodically toward a solution. That mindset shows up everywhere — in how I designed the RCNRW robot's path planning system, in how I architected the backend of my Image Processing API, and in how I approach any challenge I face academically or personally.

Egyptian Olympiad in Informatics (EOI) — 2021

The EOI is Egypt's most prestigious informatics competition, organized by the Ministry of Communications & Information Technology in collaboration with AASTMT. It is the official gateway to the International Olympiad in Informatics (IOI) — the most recognized computer science competition for secondary students globally.

TOP 60	Egyptian Olympiad in Informatics (EOI) Ministry of Communications & Information Technology (MCIT) Sept 27 – Oct 2, 2021 <i>Scope: National — All Egyptian School Students</i>	 Certificate
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- Ranked among the Top 60 programmers across all Egyptian schools nationwide
- Selected as one of the nationally qualified students for the IOI team elimination round — the final stage before Egypt selects 4 students to represent the country at the International Olympiad in Informatics
- Competed in multiple elimination rounds testing advanced algorithms, data structures, and problem solving

ECPC — Egyptian Collegiate Programming Contest — 3 Consecutive Years (2023–2025)

The ICPC Teens contest is organized under the official ICPC umbrella (the world's largest and most prestigious collegiate programming competition). Competing in this onsite contest requires qualifying through a national online round, with thousands of teams competing across Egypt. Reaching the onsite finals is a significant achievement in itself.

ECPC'25	ICPC Egyptian Teens Onsite Contest 2025 ICPC / AASTMT August 8, 2025 <i>Scope: National — Top 100 Teams in Egypt</i>	 Certificate  Photo
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ECPC'25	ICPC Egyptian Teens Online Qualification ICPC / AASTMT May 2–3, 2025 <i>Scope: National — All Egyptian Competitors</i>	 Certificate
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ECPC'24	ICPC Egyptian Teens Onsite Contest 2024 ICPC / AASTMT July 22, 2024 <i>Scope: National — Top 100 Teams in Egypt</i>	 Certificate  Photo
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ECPC'24	ICPC Egyptian Teens Online Qualification ICPC / AASTMT May 31 – June 1, 2024 <i>Scope: National — All Egyptian Competitors</i>	 Certificate
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ECPC'23	ICPC Egyptian Teens Onsite Contest ICPC / AASTMT August 6, 2023 <i>Scope: National — Top 100 Teams in Egypt</i>	 Certificate  Photo
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ECPC'23	ICPC Egyptian Teens Online Qualification ICPC / AASTMT July 16–17, 2023 <i>Scope: National — All Egyptian Competitors</i>	 Certificate
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International Informatics Olympiad in Teams (IIOT) — 2022 & 2023

TOP 30	International Informatics Olympiad in Teams (IIOT) International Organization March 24–26, 2022 & 2023 <i>Scope: International — Global School Teams</i>	 2022 Certificate
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- Selected for this elite international team competition two consecutive years
- IIOT is an international olympiad-style contest requiring advanced algorithmic problem solving under time pressure as a team of 4

SCIENCE, ROBOTICS & ENGINEERING COMPETITIONS

Alongside competitive programming, Yousef has competed in Egypt's most prominent STEM competitions, designing and building functional engineering projects submitted to national and international science fairs.

ISEF — International Science & Engineering Fair (2022 & 2023)

ISEF is the world's largest international pre-college science competition, affiliated with Society for Science. Egyptian ISEF is the national qualifying round where top projects are selected to represent Egypt at the international level.

TOP RANKS GOV. LEVEL	ISEF Egypt — Smart Agriculture Robot Egyptian Ministry of Education / Society for Science 2022 <i>Scope: Governorate-level — Cairo (National Qualifier)</i>	 Certificate
TOP RANKS GOV. LEVEL	ISEF Egypt — Automated Agricultural Robot Egyptian Ministry of Education / Society for Science 2023 <i>Scope: Governorate-level — Cairo (National Qualifier)</i>	 Certificate

Microsoft Office Specialist Egypt Championship — 2023

TOP 40	Microsoft Office Specialist Egypt Championship MCIT & Microsoft Egypt 2023 <i>Scope: National — All Egyptian School Students</i>	 Certificate  TV Proof  Press
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National finals held June 19–20, 2023 at the New Administrative Capital, under the patronage of Egypt's Minister of Communications and Minister of Education. The competition began with over 20,000 students trained nationwide, narrowed through preliminary rounds to roughly 1,000 competitors across 23 governorates, then to a final 96 students nationally — of whom I was one, ranking in the Top 40. Finalists competed at Future University in Cairo for a spot to represent Egypt at the Microsoft Office Specialist World Championship in the United States, a global competition for students aged 13–18 drawing participants from over 150 countries to select the world's top 50.

NASA International Space Apps Challenge — 2024

PARTICIPANT (TEAM LEADER)	NASA Space Apps Cairo 2024 NASA (Global Initiative) October 5–6, 2024 <i>Scope: International Hackathon — Global Participants</i>	 Certificate
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- Served as Team Leader for a 4-person team
- Developed an educational initiative teaching high school students the UN Sustainable Development Goals (SDGs) through competitions, collaborative projects, and digital learning resources
- Built project using: Canva, Project Management Tools, HTML, CSS, JavaScript

Alamein International Robotics Championship 2024 — First Place Nationwide

FIRST PLACE	Alamein Robotics Championship International Champions August 20–22, 2024 <i>Scope: International Champions — Global Participants</i>	 Proof
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- Represented Cairo Governorate multiple times in national robotics championships competing at the republic level
- Mine-detection robot competition and additional robotics events

ENGINEERING PROJECTS

Yousef has designed and built multiple functional engineering systems integrating embedded hardware, machine learning, and software. Each project addresses a real-world environmental or social problem.

Project 1 — RCNRW: Robot Cleaning the Nile River Water

Team: Ra's Revenants · Code: CAI484 · Lead: Yousef Sherif

An autonomous aquatic robot that cleans river surfaces by classifying and collecting pollutants using machine learning and embedded systems.

Technical Stack & Architecture

- Main Computing: Raspberry Pi 3 (image processing, object classification, motion control)
- Microcontroller: Arduino Nano (connected to water quality sensors)
- Sensors: pH Sensor, Dissolved Oxygen (D.O.) Sensor, EC (Conductivity) Sensor, Temperature Sensor, Ultrasonic Sensor, LiDAR Sensor, GPS Module
- Communication: LoRa Module (long-range wireless communication with base station)
- Power: Solar panels (onboard energy harvesting) + LiPo 3.7V 2000mAh battery
- AI/ML: Custom machine learning model for waste classification (plastic vs. organic)
- Mechanical: Dual servo-controlled separation gates + conveyor belt collection system
- Navigation: Path planning algorithms for autonomous deployment and return-to-base

Key Features

- Fully autonomous operation — no human intervention required during cleaning
- Intelligent waste segregation: separates plastic/metal waste from organic matter into dedicated bins for efficient recycling
- Real-time water quality monitoring (pH, dissolved oxygen, conductivity, temperature) transmitted to base station
- Solar-powered to maximize operational time and reduce environmental footprint

Circuit Diagram, System Flow Diagram, and full technical documentation available on request.

Project 2 — Automated Agricultural Robot for Sustainable Farming

Team: Yousef Sherif & Yousef Barakat · Nov 23, 2023

An autonomous farming robot integrating GPS, computer vision, and AI to perform precision planting, watering, and harvesting — reducing water use by 80%.

- Hardware: Arduino Uno, 4× DC motors, 1× Stepper motor, Servo motor, HC-SR04 Ultrasonic sensor, Soil Moisture sensor, Bluetooth HC-05
- Power: 6× 18650 batteries (3.7V), H-Bridge L298N motor drivers
- AI Integration: Computer vision for crop health monitoring and early disease detection
- Smart Irrigation: Moisture sensor-driven irrigation reducing water consumption by ~80% vs. traditional methods
- Submitted to ISEF Egypt 2022 & 2023 — ranked among top projects at Cairo Governorate level



Full project drive: drive.google.com/drive/folders/1YC54R8f3Oz...

Project 3 — Full-Stack Image Processing API

- Built a production-ready backend service using Node.js and TypeScript
- Features: RESTful image resizing API, disk-based caching, file upload with validation, 25 passing test specs using Jasmine + SuperTest
- Tech Stack: Node.js, Express, TypeScript, Sharp (image processing), Multer (file handling), HTML5/CSS3



LinkedIn post: linkedin.com/posts/turboyousef_nodejs-typescript...

VOLUNTEER & COMMUNITY SERVICE

1. School Management System

Role	Status	Duration	Compensation
Founder, Lead Developer & Volunteer	Deployed & actively used	2025 - Ongoing	Fully volunteer / Unpaid

Project Overview

Identified a major administrative challenge within a community-based educational institution affiliated with my church. The school serves students through structured educational programs and is managed through students, teachers, supervisors, and administrators. Before the system was introduced, much of the school's student information and administrative processes relied on manual, paper-based record keeping, making large amounts of data difficult to organize, retrieve, update, and maintain as the school grew.

I independently proposed, designed, and developed a complete school management platform from scratch to digitally centralize the institution's operations. I took full ownership of the project as a volunteer initiative, receiving no financial compensation and working without a technical team.

Core Features

- Student Management: Centralized student profiles and records.
- Staff Management: Organized records for teachers, supervisors, and administrative staff.
- QR-Code Attendance: Developed a QR-based attendance system allowing supervisors to scan students' QR codes using a smartphone and record attendance quickly.
- Academic Management: Digital recording and management of grades and student evaluations.
- Reports & Analytics: Enables supervisors to access organized records, attendance statistics, and administrative reports.
- Online Student Enrollment: Added an electronic application system for new students, replacing manual registration processes.
- Role-Based Access Control: Different access levels for supervisors and administrators based on their responsibilities.
- Centralized Data Management: Provides authorized personnel with a single organized system for accessing and managing school information.

Real-World Deployment & Impact

Unlike a typical student project or prototype, the system was deployed and used throughout the academic year in the school's actual daily operations. Supervisors and administrators were able to access student information, manage attendance, record academic data, and retrieve reports through the platform.

The system significantly simplified access to information and reduced dependence on scattered paper records and manual administrative processes.

After deployment, I continued maintaining and developing the platform rather than considering it a finished project. I have continued adding new features based on the school's evolving needs, including the online enrollment system for new students.

Engineering & Development

- Frontend: HTML, CSS, JavaScript, Bootstrap
- Backend: Django / Python
- Database: MySQL
- QR-code based attendance workflows
- Authentication & role-based authorization
- Data management and reporting
- Responsive interfaces designed for use on smartphones and computers
- Deployment, maintenance, debugging, and continuous feature development
- Git / GitHub for development and version control

Why This Project Matters

This project represents one of my most meaningful experiences because it moved software engineering beyond competitions and personal projects into real-world community impact. I was not assigned the project, required to build it, or working for a company. I

identified a problem, proposed a solution, learned what I needed, built the system independently, deployed it with real users, and continued improving it based on their needs.

The project demonstrated my ability to take a problem from observation → design → engineering → deployment → real-world use → continuous improvement.

2. Competitive Programming Mentor — ICPC EST Team

Role	Organization	Period	Impact
Mentor & Problem Setter	ICPC Team @ Egyptian Scientific and Technological Academy (EST)	2024 - Ongoing	50+ Students Mentored

- Mentored groups of incoming university students (Computer Science & Engineering backgrounds) in C++ programming and competitive problem solving from scratch
- Designed and delivered weekly online training sessions covering algorithms, data structures, and problem-solving strategies for ICPC-level contests
- Acted as Problem Setter for the team — creating and curating competitive programming problems to train participants
- Several mentored students went on to qualify for and compete in ICPC Egypt — a remarkable outcome achieved while Yousef himself was still in early high school
- Demonstrated rare leadership: being the youngest person in the room, yet the one teaching — a direct reflection of his competitive programming mastery



Recognition post: facebook.com/share/1XaeB6zEZY

3. Student Community — ENROLL Team

- Active volunteer member since May 2023
- Participated in organizing and managing student events and activities
- Collaborated with coaching team on student development initiatives



Participation proof: drive.google.com/file/d/1WSlxY3DCLU...

4. Student Community — College Way Team

- Served as Graphic Designer for the College Way student community team (May 2024)
- Produced visual content and designs for team events and publications



Team post: facebook.com/share/p/1HQr4aBAsy

COURSES & CERTIFICATIONS

All certifications below are verifiable via the QR codes provided. Programs marked as "Scholarship" indicate competitive, government-funded programs awarded to academically high-achieving students.

Government-Funded Scholarship Programs — Digital Egypt Cubs Initiative (DECI)

Launched by the Ministry of Communications & Information Technology (MCIT) in 2022, DECI is one of Egypt's most selective national scholarship programs for school students (Grades 7–11). Selection is competitive — only top-performing students are admitted from thousands of applicants nationwide. The program runs on a full academic-year schedule with midterm exams, semester structure, and progression standards that mirror university-level rigor. Students who fail progression criteria do not advance. Yousef completed three consecutive levels of DECI across three academic years, advancing each year within the Web Development track — a track delivered in partnership with Udacity, one of the world's leading online education platforms.

LEVEL 2	Digital Foundations MCIT Egypt & Udacity Mode: Hybrid (75% online, 25% onsite) The foundational year of the DECI scholarship. Covered HTML, CSS, JavaScript basics, web design principles, digital fundamentals, introductory data analysis, and IoT concepts. Students were trained on both technical skills and professional soft skills including time management, teamwork, and presentation skills.	 Certificate
LEVEL 3	Web Development MCIT Egypt & Udacity Mode: Hybrid (75% online, 25% onsite) Advanced into the specialized Web Development track. Built and deployed a full interactive responsive website as a capstone project. Fewer than 100 students nationally were enrolled in Level 3 across all tracks in the first DECI cohort.	 Certificate
LEVEL 4	Web Development (Advanced) MCIT Egypt & Udacity Mode: Hybrid (75% online, 25% onsite) The advanced phase of the Web Development track — building real-world production-ready applications and professional-level project portfolios. Directly maps to the Image Processing API built with Node.js, TypeScript, Express, and Jasmine testing.	 Certificate

Note to reviewer: Completing three consecutive levels of DECI is rare — the program is designed as a multi-year journey and only students who pass each year's exams and meet progression criteria advance. Most students do not complete beyond Level 2. Yousef's progression through Levels 2, 3, and 4 represents 3 years of continuous commitment to structured, externally-validated technical education delivered by Udacity in partnership with the Egyptian government.

Technology & AI Programs

AI	IBM AI BootCamp Digital Egypt Cubs Initiative / MCIT / IBM Intensive 10-hour AI bootcamp. Final project: conceptual design for an autonomous river-cleaning robot to address organic and plastic pollution.	 Certificate
AI	Artificial Intelligence Microsoft — "Develop and Change" Initiative / Ministry of Youth & Sports	 Certificate

TECH	Intel Technology & Entrepreneurship Program Egyptian Ministry of Education & Intel Completed July–August 2021. Covered technology innovation and entrepreneurship fundamentals.	 Certificate
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Technical Certifications

IT	IT Essentials Cisco Completed September 2020. Foundational IT hardware, software, networking, and security.	 Certificate
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- C++ and Problem Solving — Ministry of Communications and Information Technology (MCIT)
- MERN Stack: React, Node.js, Express & MongoDB — Udemy
- Python Programming — Microsoft
- Microsoft Office Specialist (MOS) — Microsoft

TECHNICAL SKILLS

Programming Languages

C++	JavaScript	TypeScript	Python	C#
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Web Development

React	Node.js	Express.js	HTML5 / CSS3	MongoDB
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Embedded Systems & Robotics

Arduino	Raspberry Pi	Sensors & Circuits	LoRa / GPS	SketchUp
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Tools & Platforms

Git	Jasmine / Testing	Canva / Photoshop	MS Office Suite	Fritzing
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Competitive Programming

- Codeforces Rating: Pupil (top tier for school students)
- Primary language: C++ — advanced knowledge of STL, algorithms, and data structures
- Specializations: Dynamic programming, graph algorithms, segment trees, greedy algorithms

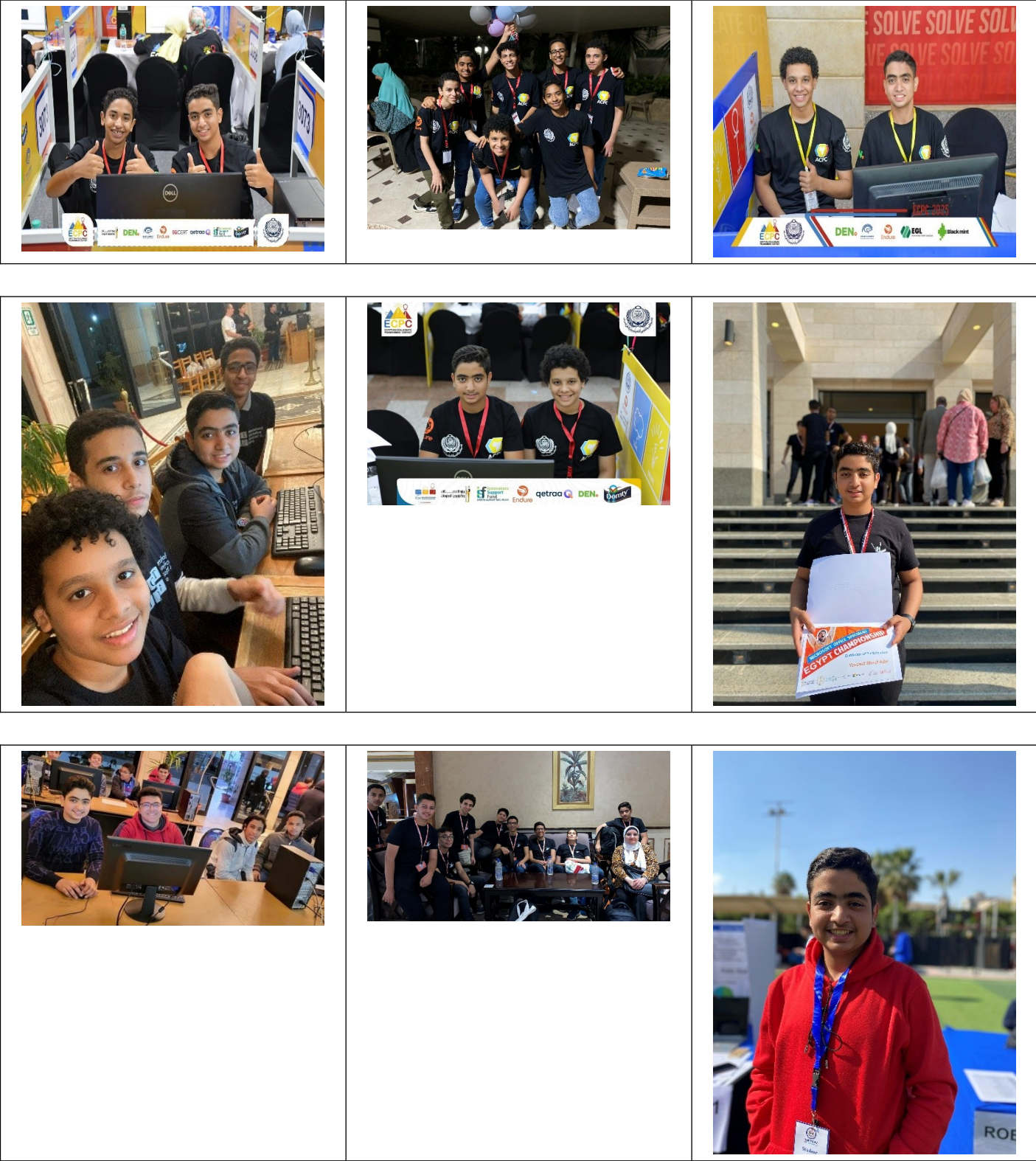
Languages

- Arabic: C2 — Native
- English: B2 — Professional working proficiency

EVIDENCE GALLERY

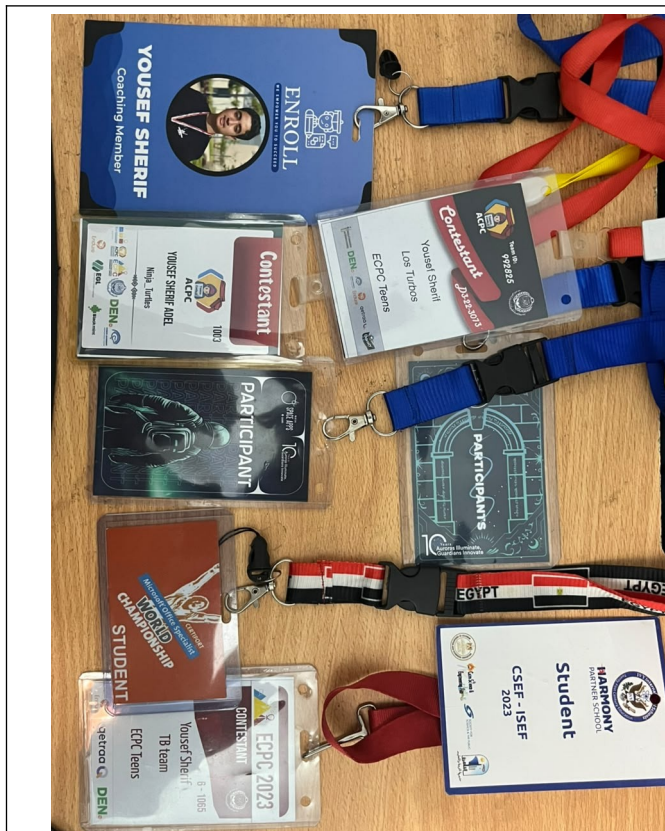
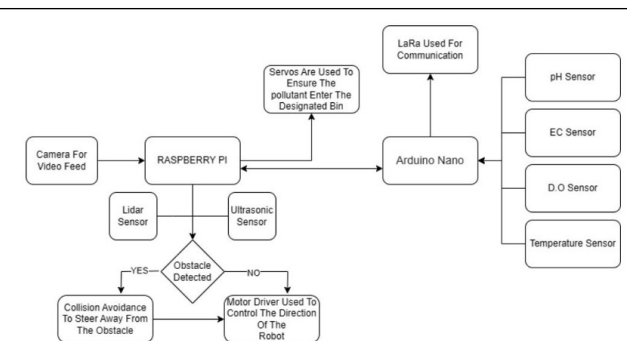
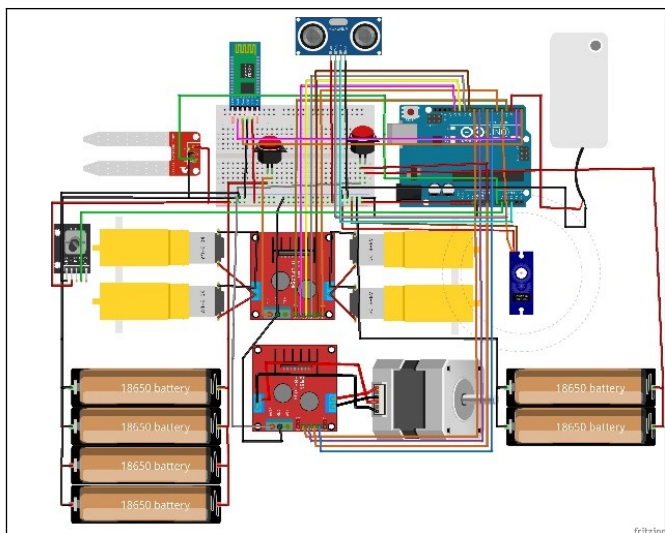
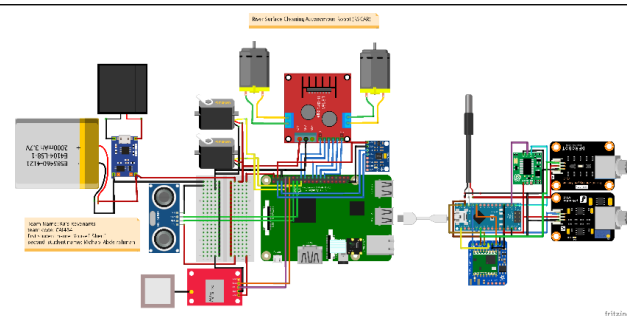
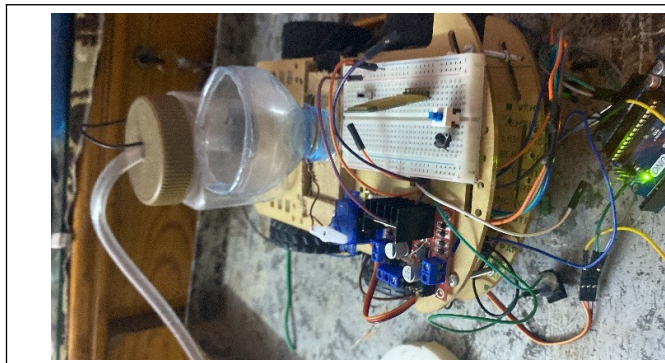
The following section is reserved for photographic evidence of Yousef's participation in competitions, events, and robotics projects. Photos from competitions, team activities, and project builds provide visual proof of the achievements documented throughout this portfolio.

Competition & Event Photos





Project Documentation Photos



Note: Circuit diagrams for both RCNRW and the Agricultural Robot are documented in technical files available on request. Electrical schematics were designed using Fritzing and show full component integration.

YUSEF SHERIF

"Starting at age 11, I chose to compete against students years older than me. I have never stopped."

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