

## REX CARVALHO

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### EDUCATION:

➤ **GEMS Wellington International School (WIS) - Dubai, UAE** January 2016-July 2026  
Currently appearing for International Baccalaureate Diploma Program (IBDP) August 2024- July 2026

#### End of Year 12: (Predicted Grades)

Higher level Mathematics in Analysis and Approaches (HL Math AA): Grade 6

Higher level Physics ( HL Physics): Grade 5

Higher level Computer Science (HL Computer Science): Grade 7

Higher Level Business (HL Business): Grade 6

Standard Level English A (SL English): Grade 6

Standard Level Spanish B (SL Spanish B): Grade 5

#### GCSE: Year 11 (higher level)

June 2024

- A\*\* or Grade 9 (highest possible) in Biology, Chemistry, Physics, Design and Technology, English Language
- A\* (highest possible) in Computer Science and Business
- A\* or Grade 8 in Edexcel Further Pure Mathematics, English Literature and Spanish

#### Early Entry Mathematics IGCSE: Year 10 (higher level)

May 2023

A\*\* or Grade 9 (highest possible) in Edexcel Math (Score 199/200)

#### End of Year 10:

August 2022

- A\*\* or Grade 9 (highest possible) in Physics,
- A\* (highest possible) in Computer Science,
- A\* or Grade 8 in Biology and Design and Technology,
- A or Grade 7 in Chemistry, Spanish, and Business Studies
- Grade 5 in English Literature.

#### ➤ Transition to Proofs Scholar, Euler Circle

2024-2025

Completed two semester-long advanced mathematics courses (8 months) focused on proof construction, set theory, and real analysis; collaborated in weekly seminars refining rigorous logic and mathematical communication.

#### ➤ CS50x Scholar, Harvard University

July 2025

Completed Harvard's 11-week *Introduction to Computer Science* course, mastering C, Python, SQL, and Flask through algorithmic projects, full-stack web development, and a final capstone integrating database and front-end design.

#### ➤ Research Fellow - Martian Agriculture, Junior Academy (NYAS)

2025

Selected globally for a 10-week NASA-aligned research project on Martian agriculture; conducted simulations on plant growth under Mars-like conditions and proposed AI-based phenology mapping for extraterrestrial biosystems.

#### ➤ Math Enrichment Scholar, New York Math Circle (NYMC)

July 2024

Selected for the AMS Epsilon Award-recognized summer program; explored number theory, combinatorics, and logic through proof-based problem-solving and collaborative mathematical inquiry.

#### ➤ Python Programming Scholar, STEM Academy UAE

June-September 2020

Completed a 3-month program covering beginner to advanced Python; built 15+ projects applying OOP, data structures, and libraries like NumPy, Pandas, and Matplotlib.

➤ **Mobile App Development Scholar, STEM Academy UAE** **October 2020**

Completed a 1-month course in Android and iOS development using MIT App Inventor, Swift, and Java; designed and deployed 5 prototype apps across multiple platforms.

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**STANDARDIZED TESTS:**

**SAT: 1500 (800 Math, 700 Reading and Writing)**

**October 4th 2025**

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**WORK AND RESEARCH EXPERIENCE:**

➤ **Researcher, Artificial Intelligence Modeling - Carnegie Mellon University, USA** **2024-2025**

Developed AI-driven models to predict climatological impacts of cloud seeding, discovering a negative correlation between rainfall enhancement and regional temperatures; published findings in International Journal of Secondary Computing and Applications Research (IJSCAR).

➤ **Research Intern - Veritas AI, USA** **July-Sep 2024**

Executed a 15-week AI research fellowship, designing predictive machine learning models for temperature and precipitation analysis; presented results at an international research symposium.

➤ **Research Intern - Power Club, USA** **2025**

Co-developed interdisciplinary educational curricula and learner analytics frameworks for middle and secondary school students; awarded Certificate in Product and Instructional Development for contributions to platform design.

➤ **Data Analytics Intern - UnikNation FZ LLC, Dubai, UAE** **July -Aug 2025**

Performed end-to-end data acquisition, statistical analysis, and visualization, producing interactive dashboards in Power BI, Tableau, and Excel to inform operational and marketing strategies.

➤ **Designer & Developer - Ergonomic Game Controller, CREST Awards, UK** **March -May 2023**

Designed and prototyped a hand-shaped, Arduino-powered game controller improving ergonomics and usability; presented to evaluators for CREST Awards recognition.

➤ **Business & IT Intern - Heathrow Virtual Work Experience Programme, UK** **March 2023**

Completed immersive modules in business strategy, operations, sustainability, IT systems, and cybersecurity; developed mock client-acquisition strategies, analyzed airport digital infrastructure, and produced reports on system optimizations and security frameworks.

➤ **Energy & Digitalisation Intern - Siemens Virtual Work Experience, UK** **April 3-10 2023**

Explored sustainable energy solutions and smart grids; completed a capstone project analyzing decarbonisation strategies, digital infrastructure, and renewable integration.

➤ **Software Development Intern - Virtual Work Experience, UK** **April 15-29 2023**

Completed a 2-week program in programming, game development, and website design; developed foundational technical skills through applied projects and professional webinars.

➤ **Cybersecurity Intern - Fujitsu Virtual Work Experience, UK** **May 1-8 2023**

Simulated cybersecurity operations for critical infrastructure, performing threat modeling, vulnerability assessment, and incident response planning under professional mentorship.

➤ **Artificial Intelligence Research Intern - Advanced AI Internship Program (AIP), Clevered Institute, UK**

**March - June 2023**

Designed a real-time Hand Gesture Recognition Application using Python and computer vision to enhance accessibility; earned Champion Badge and formal recommendation from Oxford researchers.

**> Team Member - Wharton Global High School Investment Challenge, GEMS Wellington International School** **Sep 2023-May 2024**

Managed a \$250,000 simulated portfolio in an international competition, conducting financial analysis, market research, and client-oriented investment strategies with a five-member team.

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**HONORS, AWARDS AND RECOGNITION:**

**> Leadership Gemstone Award, GEMS Wellington International School** **2025**

Selected as the single recipient in the entire year group for visionary leadership, initiative, and community impact across academics, innovation, and service.

**> Certificate of Excellence in Leadership (Computer Science Dept.), GEMS WIS** **2025**

Recognized by the Computer Science department for outstanding leadership and contribution to digital initiatives, innovation culture, and peer mentorship.

**> Gold Award, UK Mathematics Trust Intermediate Mathematical Challenge** **2025**

Earned top-tier distinction for high performance in the UKMT challenge, following consecutive strong results in 2022-2023; recognized for advanced problem-solving and mathematical reasoning.

**> Sports Leadership Qualification (SLQ) Level 3, GEMS WIS |** **2025**

Completed the highest level of SLQ after Level 1 and 2, developing advanced session-planning, communication, and safe delivery of sports coaching to peers and younger students.

**> Duke of Edinburgh Award (Gold In Progress; Silver 2024; Bronze 2022), UK** **2022-2025**

Completed multi-phase personal development program involving extended volunteering, skills development, and multi-day self-sufficient expeditions, building resilience, independence, and leadership.

**> Outstanding Progress in English Literature, GEMS WIS** **2024**

Awarded for exceptional academic growth from Year 10 to final GCSE results, achieving top grades through consistency, discipline, and self-driven improvement.

**> Global Visionary Minds Essay Competition Winner, Immerse Education (UK)** **2024**

Won for a research-based policy essay on pandemic resilience and global health systems; received a 20% scholarship toward academic summer programs at leading institutions including Cambridge and Oxford.

**> Outstanding Academic Excellence in Mathematics, GEMS Wellington International School** **2023**

Achieved the highest raw mark in the year group (199/200) in IGCSE Mathematics as an early entry, recognized for exceptional mastery and precision.

**> Academic Excellence in Computer Science, GEMS Wellington International School** **2023**

Named top performer in Computer Science for consistently highest attainment and meaningful contribution to the department's projects and culture.

**> Silver Medalist (Electric Guitar - Rock & Instrumental), World Championship of Performing Arts, USA** **2023**

Represented the UAE in Los Angeles at WCOA ("Talent Olympics") competing against artists from 60+ countries; won two Silver Medals in Electric Guitar performance.

**> Mathematics & STEM Distinction Awards (GCIMO, Cayley Contest, AMC 8 Finalist, Dubai STEM Olympiad Finalist)** **2022-2024**

Recognized for high performance in international and regional math/STEM contests (including 82% in GeniusCerebrum GCIMO and finalist standing at Dubai STEM Olympiad), demonstrating consistent analytical and competitive strength.

➤ **Gold Medalist, Javelin Throw, GEMS Wellington International School Athletics** **2021-2023**

Won gold three years in a row and set a school record of 26 m, highlighting consistency in performance and technique under pressure.

➤ **Most Improved Player (U14 Basketball / U13 Football), GEMS Wellington International School** **2021-2022**

Recognized for rapid development and commitment in school basketball and football squads, earning “Most Improved Player” awards in both sports.

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**PUBLICATIONS:**

➤ **Rex Carvalho, Ihita Mandal, *Using AI Modeling to Predict the Impact of Cloud Seeding on Amount of Rainfall and How that Affects the Temperature in Different Regions*, pages 34-37, International Journal of Secondary Computing and Applications Research (IJSCAR) (<https://ijscar.org/pubs/vol2-issue1.pdf>)**

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**LEADERSHIP:**

➤ **Co-Executive, TEDxWIS 2026, GEMS Wellington International School** **2025-2026**

Lead organizer of a licensed TEDx conference for 100+ attendees; oversaw licensing, event design, speaker development, technical production, and a 50+ person team (logistics, media, finance, creative, external relations).

➤ **Team Leader, PwC Future Skills AI Challenge, PwC Middle East / GEMS Wellington International School** **2025**

Directed a school-selected team to design an AI-powered Proposal Tracker for PwC, centralizing proposal data, surfacing win/loss insights, and proposing machine learning features to improve decision-making and resource allocation.

➤ **Head Organizer, AI Nexus: Connecting Minds (Dubai AI Week Student Conference), GEMS Wellington International School** **May 2025**

Planned and delivered an AI conference hosting 300+ student participants and 12+ global AI speakers; coordinated programming, logistics, panels, and live demos to position the school as a regional leader in AI literacy and ethics.

➤ **Executive Lead, Year 12 Careers Day, GEMS Wellington International School** **2025**

Managed a 15-member student team and coordinated 20+ external speakers across 12+ simultaneous sessions for 150+ students, delivering exposure to sectors including AI, medicine, engineering, sustainability, and hospitality.

➤ **Head of Shape Robotics Internship, GEMS Wellington International School** **2023-2025**

Led a 25-student internship team working with Shape Robotics to test hardware/software, propose product improvements (including color-blind accessibility modes), and draft cross-curricular robotics lesson plans for long-term classroom adoption.

➤ **Inclusion Ambassador, Secret Garden Initiative, GEMS Wellington International School** **2025-present**

Led an inclusion-focused garden project with 20+ students of determination, developing accessible planting systems and hosting a public showcase for 150+ families, teachers, and students to celebrate independence and confidence-building.

➤ **Vice President, AI Ethics Council & E-Safety Ambassador, GEMS WIS** **2024-present**

Launched school-wide digital safety and AI responsibility initiatives, including SCREEN SMART FAIR, directly engaging 200+ students in topics like cybersecurity, online behavior, and ethical AI use; built resources for staff to integrate AI responsibly into teaching.

- **Head of Logistics & Advertising, Global Entrepreneurship Week, GEMS WIS** **2024-2025**  
 Ran logistics and promotion for a school-wide entrepreneurship program engaging 200+ students; introduced a student “Shark Tank” pitch competition and coordinated venues, schedules, and faculty partnerships/
- **Lead Organizer, Robotics Fair, GEMS Wellington International School** **April 2025**  
 Hosted a multi-school robotics challenge structured around four technical stations; authored problem tasks, coordinated rotations, managed scoring systems, and mentored visiting teams through coding, troubleshooting, and robot control.
- **Lead Instructor, International Women’s Day Robotics Crash Course, GEMS Wellington International School** **March 2025**  
 Designed and delivered a hands-on robotics and coding workshop for women in the school community, focusing on confidence-building and first exposure to hardware, logic, and programmable movement.
- **Math Ambassador, GEMS Wellington International School** **2023-present**  
 Founded and led Math Helpdesk, Math Week, and UKMT prep sessions supporting 50+ peers annually through competition training, enrichment workshops, and one-on-one curriculum support.
- **MUN Leadership (Director of Technology 2026 / Head of Crisis 2024 / WTO Chair 2023), WIS MUN** **2023-present**  
 Directed crisis simulations, trained delegates in debate and resolution writing, and led fast-response committees; coordinated conference operations and mentored new delegates in research, diplomacy, and speech.
- **Digital Leader & Programming Club Mentor, Computer Science Dept., GEMS Wellington International School** **2023-present**  
 Organized coding outreach events (including the SPHERO Maze Challenge and inter-school programming sessions), mentored younger students in robotics and programming, and promoted hands-on problem solving through accessible tech education.
- **Founder, WIS Hackathon, GEMS Wellington International School** **2022-present**  
 Initiated the school’s first Hackathon (Years 5-12), built event branding, designed challenge tracks around real-world problems, and established it as an annual flagship tech and innovation event for the school.

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**COMMUNITY SERVICE:**

- **Founder & President, Mission SaveEats (Food Waste Redistribution Initiative), Dubai, UAE** **2024-present**  
 Founded an initiative to redirect surplus supermarket and restaurant food to labor communities; analyzed waste data, modeled distribution routes, and built partnerships to reduce landfill-bound food and address food insecurity.
- **Founder & President, Robotics Club for Kids of Determination, GEMS Wellington International School** **2025-Present**  
 Run 2-3 weekly robotics and block-coding sessions for students of determination, adapting instruction for different sensory and cognitive needs to build fine-motor control, problem-solving, and confidence.
- **Volunteer Robotics Mentor, Senses Residential & Day Care Centre, Dubai** **2025-present**  
 Delivered step-by-step robotics and coding instruction to students with diverse learning needs, breaking down tasks into achievable wins and building engagement through movement, sound, and feedback-based challenges.
- **Lead Volunteer, Robotics Outreach Event, Rashid Centre for People of Determination, Dubai** **May 2025**  
 Led a student team to deliver tailored robotics workshops to learners with varying support needs; matched activities to ability level and documented impact for future outreach.
- **Environmental Advocate, Emirates Environmental Group (EEG), UAE** **2022-present**

Led a neighborhood recycling campaign collecting 100+ kg of single-use plastic in two weeks, earning three trees planted under my name; organized paper and aluminum drives, school clean-ups, and SDG-aligned awareness campaigns.

➤ **WISH Initiative & ECO Ambassador, GEMS Wellington International School** **2022-2024**

Raised funds for school-building projects in Cambodia through student-led events, and coordinated sustainability efforts such as Eco Week, beach clean-ups, and daily awareness campaigns on reuse and waste reduction.

➤ **Scorer, DP World Tour Golf Championship, Dubai, UAE** **2023-2025**

Served as an on-course scorer for a televised international tournament for three consecutive years, tracking live stats and scores for pro golfers over 18-hole rounds and representing the school with professionalism and accuracy.

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**TECHNICAL SKILLS:**

Arduino	2019-present
Python	2020-present
Java	2021-present
HTML and CSS	2022-present
Word, Excel, and PowerPoint	2018-present
SQL	2023-present

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**SPORTS:**

➤ **Golf, Troon Golf Academy / Montgomerie Dubai** **2022-present**

Progressed from beginner camp to elite training squad; earned “Most Improved Junior Black Pearl of the Year” and multiple top-scorer awards in 2022-2023.

➤ **Javelin, GEMS Wellington International School Athletics** **2021-2023**

Three-time gold medalist in school competition and current school record holder with a 26 m throw.

➤ **Basketball & Football, GEMS Wellington International School Teams** **2021-2022**

Competed for school squads and earned “Most Improved Player” in both U14 Basketball (2022) and U13 Football (2021) for work ethic and growth.

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**CREATIVE PASSIONS:**

➤ **Electric Guitar (Rock & Pop), UAE / USA** **2022-present**

Performer specializing in electric guitar; won two Silver Medals at WCOPA 2023 (Los Angeles) in Rock and Instrumental divisions and **currently preparing for Trinity College London Grade 8 Rock & Pop.**

➤ **Automotive Design & Engineering Interest**

Independent interest in cars and bikes, with a focus on mechanical systems, aesthetics, and performance engineering.