

ALEXANDER CIZ YORI

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Education

Imperial College London

Second Year MEng Mechanical Engineering — First Year Grade: Upper Second Class Honours

Sep 2025 – Jun 2029

London, UK

St Dominic's Sixth Form College

A-Level: A, A*, A, A in Mathematics, Computer Science, Physics and Further Mathematics*

Sep 2023 – Jun 2025

Harrow, UK

Bushey Meads School

GCSE: 9, 9, 9, 9, 9, 9, 9, 8, 8, 7

Sep 2018 – Jun 2023

Bushey, UK

Experience

Focus Displays

Sep 2024 – Aug 2026

Manufacturing & Technical Assistant

- Manufactured custom PCBs for modular LED displays from initial schematic capture to fabrication, component-level soldering, wiring harness assembly, and benchtop testing.
- Executed laser cutting and CNC routing of acrylic optical diffusers and enclosures for custom LED displays.
- Assisted with on-site repairs and installations by diagnosing power delivery issues and IC faults on malfunctioning LED panels.

VEX Robotics Competitor

Nov 2021 – Mar 2025

Team Lead and Build/Design Lead

- Founded and led a competitive team at secondary school and sixth form, securing over £10,000 in funding to finance hardware, tools and international travel.
- Engineered a pneumatic power take-off transmission to bypass strict 8 motor constraints, shifting all 6 drive motors to a high torque winch paired with an elastically tensioned, pneumatically deployed latching arm to elevate the robot 3ft.
- Designed a high speed flywheel disc launching mechanism with a pneumatically actuated angle deflector for disc trajectory control, alongside custom 4-bar linkages, chain-driven intakes and self-aligning clamps.
- Led mechanical CAD modelling, and physical prototyping, earning 22 total regional/national awards and representing the UK at the World Championships in Dallas, Texas.

Projects

Smart Pet Companion Robot | *ESP32, Arduino, Fusion, PCB Design*

- Designed a modular 3D printed enclosure housing a holonomic X-drive, centrifugal treat launcher, ESP32 Wi-Fi camera with LED lighting, and a motorised feather teaser.
- Implemented a dual microcontroller architecture using serial communications to offload motor control and servo timing from the ESP32 to an Arduino Pro Mini.
- Integrated an ESP32 hosted web server for real time video streaming and remote control, generating control signals routed via PWM for motor drivers, and transistor switching circuits.
- Fabricated a custom PCB on a CNC router to house motor drivers, voltage regulators, and inter-board communications onto a single compact layout.

Rebar Bender Transmission Design | *SolidWorks, Powertrain Design, Mechanical Systems*

- Designed a 4-stage transmission featuring a flexible SPA 2-groove V-belt input stage with a tensioner, followed by three fixed spur gear stages to reduce a 5.5 kW, 2877 RPM motor input down to 10.3 RPM and 5085 Nm output torque.
- Modelled the full mechanical assembly in SolidWorks, integrating MOD4 spur gears, SKF pillow block bearings, and a welded structural steel C-channel frame.
- Produced fully dimensioned engineering drawings for transmission shafts and shaft sub-assemblies, specifying ISO limits and fits and keyway geometries.

Fluid Mechanics Pipe Performance Analysis | *Fluid Dynamics, Data Analysis*

- Analysed pressure drops and volumetric flow rates across five steel pipe test sections to investigate a defect claim regarding restricted flow.
- Calculated Reynolds numbers and experimental friction factors, performing comprehensive error propagation to account for measurement uncertainties.
- Identified a defective pipe batch by evaluating experimental data against theoretical smooth pipe curves and a 0.1 mm maximum roughness limit using the explicit Haaland equation and Moody charts.

Skills

CAD & Software: SolidWorks, Autodesk Inventor, Autodesk Fusion, Onshape, Python, Arduino IDE

Electronics & EDA: Schematic Capture, PCB Layout, Microcontrollers

Manufacturing & Prototyping: 3D Printing, CNC Routing, Laser Cutting, Component Soldering, DFM

Languages: English (Native), Slovak (Native), Czech (Fluent)