#### Cesar A. Contreras

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## **EDUCATION**

## **University of Birmingham**

PhD in Robotics

**Dissertation Subject**: Variable autonomy control paradigm applied to mobile manipulation. **Field**: Robotics | Nuclear Decommissioning | Cognitive Sciences | Artificial Intelligence | XR

## University of Birmingham

M.Sc. Computational Neuroscience and Cognitive Robotics with Distinction
 Sept 2022 - Sept 2023
 Dissertation Subject: Falling Ball - Gravity perception and eye tracking during object interception in VR.
 Field: Robotics | Neurosciences | Software Engineering | XR
 Relevant Courses: Probabilistic Robotics, Mind Brains and Models, Brain Imaging, Electrophysiological Approaches in Cognitive Neuroscience.

## **Anahuac University North Campus**

BSc in Mechatronics Engineering

**Dissertation Subject**: Robot Operating System for Industry 4.0 **Field**: Robotics | Software Engineering | Mechatronics | Automation.

- Industrial Automation Diploma.
- Automotive Mechanics Design Diploma.
- Entrepreneurial Studies Diploma.

**Relevant Courses**: Robotics, Industrial Networks, Inmotics and Domotics, Industrial Vision Systems (Computer Vision), Computer Design, Informatics: AR and VR, Digital Circuits, Introduction to Bioengineering, Microelectromechanical Systems (MEMS), Embedded Systems.

## **EXPERIENCE**

## **Extreme Robotics Laboratory**

**Robotics Research Engineer** 

- Part of "Research and Development of a Highly Automated and Safe Streamlined Process for Increase Lithium-ion Battery Repurposing and Recycling" (REBELION)
- Part of National Nuclear Laboratory Research Project.
- VR and Mixed Reality Technologies Research.
- Cognitive Robotics Research.

## Sensorimotor Computation Lab (Yeo Lab)

## MSc Student Researcher

- Created and conducted experiments related to eye tracking and eye movement using simulation, analyzing human biomechanics and movement predictions.
- Processed and cleaned data to generate a wide range of graphs and statistical models for in-depth analysis of experimental data, resulting in detailed insights into human behavior and physiology.
- Calibrated sensors and implemented device bridges to facilitate XR simulation and experimentation.

## **Grupo Importadores**

## Software Engineer

- Demonstrated strong problem-solving skills and a deep passion for developing software solutions that catered to users' needs.
- Collaborated with a team to launch a new website, which led to a remarkable 50% increase in customer engagement and a surge of new clients.
- Ensured optimal performance and reliability of computer systems and servers by performing regular updates, diagnostics, and maintenance, resulting in a 95% uptime.

Birmingham, UK Sent 2022 - Sent 2023

Huixquilucan, MX Aug 2016 - Dec 2020

Birmingham, UK

Feb 2023 – Present

Birmingham, UK

Oct 2022 - Sept 2023

Eagle Pass, USA - Piedras Negras, MX

Mar 2021 - Feb 2023

g 2016 - Dec 2020

Birmingham, UK Sept 2023 - Sept 2027

## **Dreamlands' Guild**

## Software Engineer (Self-Employed)

- Developed mobile applications using Flutter, delivering fast and responsive user experiences across multiple platforms.
- Designed and built games using Unity and programmed with C# and machine learning algorithms to strengthen user engagement and interactivity.
- Leveraged Python scripts to interface with software and hardware systems, enabling seamless communication and data exchange.

# Laboratory of Automation and Manufacturing Anahuac University

## Junior Robotics Engineer (Practicum)

- Collaborated as a member of a 4-person team to design and implement a methodology for integrating the Robot Operating System with existing lab equipment, paving the way for the development of future projects using this powerful framework.
- Conducted more than 50 simulations of robots using CIROS Studio, Gazebo, CoppeliaSim, MoveIt, and MATLAB, and ensured seamless integration with the ROS framework, rigorously testing and validating the functionality.

## CADIT - Centro de Alta Dirección en Ingeniería y Tecnologías

## Technology and Innovation Engineer (Social Service)

- Researched 3D printing applications for lower jaws and teeth using DICOM files, testing prints in 3 materials, and simulating prosthesis designs to improve patient outcomes and drive dental industry innovation.
- Customized and automated 3D printing hardware to operate with in-house materials, reducing equipment costs by more than 30% and streamlining the prototyping process.
- Prototyped and tested body equipment to improve and adapt the functionality of existing Human-Machine Interface technology, facilitating user interaction.
- Led a small team of 3 people in finding potential applications for newly acquired equipment and components using rapid prototyping techniques, including commercially available hardware and in-house technology.

## Laboratory of Automation and Manufacturing Anahuac University

## Mechatronics Student Club Captain

- Led a team of 6 in completing time-based projects, achieving up to 15% reduction in project completion time and reducing final product costs by 5 to 10%.
- Identified and evaluated solutions to engineering problems and determined the most efficient and effective solutions to ensure successful project completion.
- Redesigned CAD files for simple robotic models and created electronic schematics for simulations. Programmed embedded systems and prototyped projects to verify the feasibility and increase the club's capabilities.

## SKILLS AND INTERESTS

Programming Languages: Python, C#, MATLAB, C, C++, Flutter, Assembly, PLC (LD, FBD, ST, IL)
Software: CIROS Studio, Factory I/O, FluidSIM, Proteus, PTC Creo Parametric, SolidWorks, Simulink, Mastercam, Microsoft Office Suite, Multisim, Polyscope for UR, LOGO! by Siemens. Unity, Ubuntu, Linux.
Tools: PyCharm, Spyder, MATLAB, VS Code
Frameworks: OpenCV, UltraLeap SDK, FOVE SDK, OpenXR, OPENGL, Vuforia, POLHEMUS Fastrak
Languages: English, Spanish, French (Basic)

**Interests:** Robotics, assistive AI for human activities and videogames, adaptive VR/AR experiences, simulated environments, self-driving vehicles, computer vision, farming, dreams, and smart cities and homes.

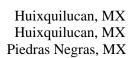
## **OTHER EXPERIENCES**

INGENIA (Co-Founder) Anahuac University ASUA Anahuac University INTERACT Club Treasurer for Rotary District 4110

## **ADDITIONAL INFORMATION**

Other Technical Skills:

- Proficient in operating robot arms from leading manufacturers such as UR, KUKA, and Mitsubishi, and in designing and operating advanced manufacturing cells to ensure maximum productivity.
- Skilled in prototyping with a range of microcontrollers, FPGA boards, and microprocessors.



Huixquilucan, MX Aug 2019 - Dec 2020

Huixquilucan, MX

Jan 2019 - Dec 2020

Huixquilucan, MX Jun 2020 - Dec 2020