Cesar A. Contreras

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EDUCATION

University of Birmingham Birmingham, UK

PhD in Robotics **Sept 2023 - Sept 2027**

Dissertation Subject: Variable autonomy control paradigm applied to mobile manipulation.

Field: Robotics | Nuclear Decommissioning | Cognitive Sciences | Artificial Intelligence | XR

University of Birmingham Birmingham, UK

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 Huixquilucan, MX

BSc in Mechatronics Engineering **Aug 2016 - Dec 2020**

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 Birmingham, UK

Robotics Research Engineer **Feb 2023 – Present**

- 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) Birmingham, UK

MSc Student Researcher **Oct 2022 – Sept 2023**

- 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 Eagle Pass, USA - Piedras Negras, MX

Software Engineer **Mar 2021 - Feb 2023**

- 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.

Dreamlands' Guild Eagle Pass, USA
Software Engineer (Self-Employed) **Mar 2021 - Sept 2022**

- 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 Huixquilucan, MX
Junior Robotics Engineer (Practicum) **Jun 2020 - Dec 2020**

- 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 Huixquilucan, MX
Technology and Innovation Engineer (Social Service) **Aug 2019 - Dec 2020**

- 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 Huixquilucan, MX
Mechatronics Student Club Captain **Jan 2019 - Dec 2020**

- 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 Huixquilucan, MX
ASUA Anahuac University Huixquilucan, MX
INTERACT Club Treasurer for Rotary District 4110 Piedras Negras, MX

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.