Héctor López González

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Nationality: Spain & Mexico

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PERSONAL PROFILE

Highly accomplished and innovative Mechatronics Engineer with a distinguished academic record (Master's GPA 9.9/10, Bachelor's GPA 9.2/10, both with Honorific Mentions) and over 6 years of diverse professional and research experience. Passionate about conducting cutting-edge, experimental research at the intersection of advanced control systems, artificial intelligence, robotics, and technological product development. My research interests include:

- **Advanced Control Systems:** Designing and implementing robust control strategies for complex dynamic systems.
- **AI & Robotics for Performance Analysis:** Applying AI and mechatronics to analyze and enhance performance in dynamic environments, with a particular interest in sports applications (e.g., football/soccer), human movement, and biomechanics.
- **Human-Robot Interaction & Haptics:** Developing intuitive interfaces and haptic feedback systems for immersive virtual reality and real-world robotic applications.
- **Innovative Product Design & Prototyping:** Translating theoretical concepts into tangible, high-performance mechatronic products with a focus on non-industrial applications.

My background includes significant hands-on experience in embedded systems, real-time control, and software development, complemented by a proven ability to lead interdisciplinary projects and mentor junior researchers. I am seeking a challenging doctoral program that offers a highly experimental environment and opportunities for interdisciplinary collaboration to contribute meaningfully to the next generation of mechatronic innovation.

EDUCATION

Master of Science in Engineering

Universidad Iberoamericana, Mexico City, Mexico | January/2020 – March/2022
- GPA 9.9/10
- Awards: Honorific Mention.
- Thesis: Formation Control of Thermal Agents for Distributed Heat Sensations in Immersive Virtual Reality Applications
- Relevant Courses: Advanced Process Control, Engineering Systems Design, Advanced Biomechanics.

Bachelor of Mechatronics and Production Engineering

Universidad Iberoamericana, Mexico City, Mexico | August/2014 – May/2019
- GPA 9.2/10 (Highest GPA in program)
- Awards: Academic Excellence and Honorable Mention.
- Thesis: Parallel Cable Robot for Storage Facilities.
- Relevant Courses: Process Dynamics, Embedded Systems, Process Control, Power Systems, Industrial Automation.

Bachelor of Mechatronics and Production Engineering (Exchange program)

University of Wollongong, New South Wales, Australia | June/2018 – December/2018
- Relevant Courses: Robotics and Flexible Automation, Game Engine Essentials.

Diploma in Business

Greenwich College, New South Wales, Australia | September/2024 – August/2025

RESEARCH EXPERIENCE

Universidad Iberoamericana, Mexico city, Mexico

Postgraduate Research Assistant | January/2020 – March/2022
- Led the development of 4 immersive virtual reality environments and 3 innovative haptic devices, resulting in 1 published paper, 2 conference presentations and 1 radio program feature.
- Mentored and provided technical guidance to postgraduate researchers on advanced control systems, robotics and virtual reality, directly contributing to 3 successful project completions.
- Contributed to the design and assessment of a virtual reality kayak simulation integrated with a robotic seat for CVA patient balance rehabilitation, including the design of a novel haptic paddle.
- Areas: Advanced Control Systems, Multi-Agent Systems, Human-Robot interactions, Haptics, Virtual Reality, Embedded Systems, Prototyping.

Undergraduate Research Assistant | August/2016 – January/2020
- Programmed and implemented embedded systems for robotics and multi-agent systems for the Institute of Applied Research and Technology (INIAT), contributing to more than 5 successful projects.
- Assisted professors in Automation Engineering and Laboratory, and Process Dynamics Classes.
- Guided prospective students of Mechatronics and Production Engineering and Computer Technologies and Telecommunications Engineering through university facilities.
- Areas: Embedded Systems, Robotics, Multi-Agent Systems, Advanced Control Systems, Artificial Intelligence, Prototyping

PUBLICATIONS & CONFERENCES

Journal Publications

- H. López-González, E. G. Hernández-Martínez, R. de J. Portillo-Vélez, E. D. Ferreira-Vázquez, J. J. Flores-Godoy, and G. Fernández-Anaya, "Formation Control for Thermal Multi-Agent Systems," Proceedings of the 2021 IEEE URUCON, 2021, pp. 390–394, doi: 10.1109/URUCON53396.2021.9647108. https://ieeexplore.ieee.org/document/9647108

- H. López-González, E. G. Hernández-Martínez, R. de J. Portillo-Vélez, J. J. Flores-Godoy, E. D. Ferreira-Vázquez, and G. Fernández-Anaya, "Formation control of multi-agent thermal systems to render distributed temperature patterns," Cogent Engineering, vol. 12, no. 1, 2025, doi: 10.1080/23311916.2025.2572298. https://doi.org/10.1080/23311916.2025.2572298

Conference Presentations

- **META+IBERO, 2022** | Topic: Opportunities and Challenges of the Metaverse in Mexico | Universidad Iberoamericana, Mexico City, Mexico.

- **IEEE URUCON, 2021** | Topic: Formation Control for Thermal Multi-agent Systems | IEEE URUCON

TEACHING EXPERIENCE

Universidad Iberoamericana, Mexico city, Mexico

UNIVERSITY LECTURER | January/2022 – December/2023

Postgraduate Courses
Virtual Reality and Haptic Devices Programming | August/2022 – December/2023
- Method: Taught face-to-face
- Designed comprehensive course titled "Virtual Reality and Haptic Devices Programming"
- Created detailed lesson plans, lecture notes and laboratory practices.
- Organized class lectures and set deadlines for projects.

Undergraduate Courses
Circuits Engineering and Laboratory | January/2022 – December/2023
- Method: Taught face-to-face
- Organized class lectures and laboratory and set deadlines for projects.
- Delivered weekly lectures to over 100 undergraduate students, achieving a 95%+ course satisfaction rate.

Embedded Systems/Microcontroller Programming | January/2022 – December/2023
- Method: Taught face-to-face
- Organized class lectures and laboratory and set interdisciplinary projects scopes.
- Delivered weekly lectures to over 100 undergraduate students, achieving a 95%+ course satisfaction rate.

PROFESSIONAL APPOINTMENTS

iOpen, Wollongong, Australia
SALES AND APPLICATIONS ENGINEER | November/2024 – November/2025
- Design and present complex demonstration systems, effectively showcasing advanced automation solutions to prospective clients.
- Provided expert technical support for software and hardware, resolving critical issues and ensuring seamless system operation.
- Deliver comprehensive training programs, enhancing client proficiency product adoption.

Ultrasist S.A. de C.V., Mexico City, Mexico
LEAD FRONTEND ENGINEER | March/2023 – December/2023
- Led a team of 6 programmers to deliver 2 web applications, conducted client meetings, managed client relationships, delegated tasks and developed front-end solutions using React.Js.
- Achieved a 50% increase in front-end performance through optimized code and user interface enhancements.

SENIOR SOFTWARE ENGINEER | July/2022 – March/2023
- Developed APIs in C# and contributed to front-end development using React.Js.
- Successfully delivered 2 confidential projects in 50% of the allocated time.

Freelance (Self-Employed), Mexico City, Mexico
EMBEDDED AND PROCESS CONTROL SYSTEMS ENGINEER | April/2020 – June/2022
- Managed client relationships, designed process control systems, developed embedded software, programmed PLCs, designed mechanical parts, created prototypes and led teams to deliver multiple successful projects.
- Installed, updated, repaired and programmed 17 security drone port systems for *"Grupo Tecnológico Santa Fe S.A. de C.V."* across Mexico.
- Programmed, repaired, and designed mechanical parts of an industrial face mask production system, increasing system productivity by 100% for *"Cubre-Bocas.mx"*.

All Robot, Mexico City, Mexico
EMBEDDED AND PROCESS CONTROL SYSTEMS ENGINEER | April/2019 – December/2020
- Implemented process control systems, developed embedded software, programmed PLCs, selected and installed sensors and actuators, and designed mechanical parts for a 9 modules automation testing system and developed embedded software for 2 courses for professionals in the automotive industry.

SKILLS

Languages: Spanish (Native Speaker), English (Proficient C2), German (Beginner), Italian (Beginner)

Professional Skills: Leadership, Problem-Solving, Critical Thinking, Adaptability, Creativity, Innovation, Quick Learning, Teamwork, Verbal/Non-verbal Communication, Stress Management.

Technical Skills: Advanced Control Systems, Robotics, Embedded Systems, PLC Programming, Circuit Design, Soldering, Prototyping, Internet of Things, Artificial Intelligence.

Programming Languages: Embedded C, C, C++, C#, Ladder Logic, Python, MicroPython, React.js, SQL, PHP, HTML, CSS, JavaScript.

IT Software: MATLAB, MATLAB-SIMULINK, Autodesk AutoCAD, Autodesk Inventor, Allen Bradley CCW, Siemens TIA Portal, Unity, MQTT, VICON Nexus.

CERTIFICATIONS & DIPLOMAS

Dream Report 2023 R2 Foundations – Ocean Data Systems
JMobile Level 1 Training – EXOR Oceania
Octoplant Administration Training – Auvesy-MDT
ITIL Foundation Certificate in IT Service Management (No. GR671539832HL) - PeopleCert
IELTS ACADEMIC 8.5/9.0 (CEFR level C2) – Test Report Number: 23MX501316LOPH030A – British Council

COURSES

VR Development Fundamentals with Oculus Quest 2 and Unity – www.udemy.com (2021)
Unreal VR Dev: Make VR Experiences with Unreal Engine in C++ – www.udemy.com (2020)
Unreal Engine C++ Developer: Learn C++ and Make Video Games – www.udemy.com (2020)
Introduction to VR with Unity – www.udemy.com (2020)
Introduction to Game Development with Unity – www.udemy.com (2019)
Body Language for Entrepreneurs – www.udemy.com (2018)
Python – www.teamtreehouse.com (2017)

EXTRA-CURRICULAR ACTIVITIES

Engineering Science Post Graduate Technical Council:
- Master's degree student representative (November/2020–April/2022)

Electronics Engineering Student Society:
- Events Director and Public Relations. (January/2016–December/2018)

Sports:
- Third-division professional football player at *Atlante F.C.* and *C.D. Guadalajara (Chivas)*. (2010–2015).
- Football player for Mexican teams reserves of *Cruz Azul F.C.*, *Club América*, *Deportivo Toluca F.C.* and *Atlante F.C.* (2006–2010).
- Football player for United Wolves AFC Division 1, First Grade. (2024-2025)

Social Work:
- Taught football classes for kids in poverty and/or dangerous situations inside the *Malinalco* community. (January/2019–July/2019)

Volunteering:
- Managed donations and resources for earthquake affected zones in Mexico after the 19th of September 2017.

INTERESTS

Advanced Control Systems, Innovation, Artificial Intelligence, Virtual Reality, Robotics, Multi-Agent Systems, Automation, Programming, Sustainability, Internet of Things (IoT), Domotics, Sports Technology.

REFERENCES

Eduardo Gamaliel Hernández Martínez (PhD)
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