Héctor López González

Email: hec.lopezgonzalez@gmail.com

Linkedin: https://www.linkedin.com/in/hector-lopez-gonzalez/

Portfolio: https://www.hectorlopezg.com

Nationality: Spain

Date of Birth: 02 January 1996

ORCID: 0000-0002-4289-4642

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. Lopez-Gonzalez, E. G. Hernandez-Martinez, R. d. J. Portillo-Velez, E. D. Ferreira-Vazquez, J. J. Flores-Godoy, and G. Fernandez-Anaya, "Formation Control for Thermal Multi-agent Systems," *2021 IEEE URUCON*, 2021, pp. 390-394, doi: 10.1109/URUCON53396.2021.9647108. https://ieeexplore.ieee.org/document/9647108

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 – Current

- 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)
Mexico City, Mexico
Divisional Director, Science, Art, and Technology Division at Universidad Iberoamericana, Ciudad de México.
Previous Institute of Applied Research and Technology Director
Email: eduardo.gamaliel@correo.uia.mx
Tel: (+52) 55 4048 2505

José Antonio Morfín Rojas (M.Sc.)
Mexico City, Mexico
Previous Divisional Director, Science, Art, and Technology Division at Universidad Iberoamericana, Ciudad de México.
Previous Electronics Engineering Coordinator at Universidad Iberoamericana, Ciudad de México
Email: jose.morfin@ibero.mx
Tel: (+52) 55 5406 6338

Sergio Antonio Foyo Valdés (PhD)
Mexico City, Mexico
Previous boss at All Robot
Email: sergioantoniofoyo@gmail.com
Tel: (+52) 55 3392 3338