

Leonardo Camargo-Forero

UbiHPC CEO

Creator of technologies merging supercomputing and robotics . High Performance Computing (HPC) and High Performance Robotic Computing (HPRC) architect with 8+ years experience in supercomputing and 4+ years experience in robotics. Science fiction writer, entrepreneur.



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📍 Pasadena, USA

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SKILLS & COMPETENCES

High Performance Robotic Computing



Distributed software architecture designing



High Performance Computing



Software development



Linux



Team leadership



Writing



Social skills



WORK EXPERIENCE

Chief Executive Officer

UbiHPC

02/2017 – Present

UbiHPC is a company specialized in supercomputing, yet not only about huge machines, such as those used to predict the weather, to understand our genetics or to describe the origins of the universe, no, not just that, but everywhere, even at multi-robot systems by exploiting a new computer science field called High Performance Robotic Computing www.ubihpc.com

Visiting student researcher

NASA/Caltech Jet Propulsion Laboratory

03/2019 – Present

Pasadena, California, USA

Achievements/Tasks

- Darpa SubT challenge. <https://subt.jpl.nasa.gov/>

Ph.D thesis

Intelligent Communications and Avionics for Robust Unmanned Aerial Systems - ICARUS - Barcelona TECH

11/2014 – Present

Barcelona, Spain

Achievements/Tasks

- Creation of the field of High Performance Robotic Computing (HPRC) and the ideas behind HPRC clusters [🔗](#)
- Implementation of High Performance Computing MPI software for the coordinated motion of multiple UAVs, UGVs
- Design and development of The ARCHADE, a framework/middleware for the creation and operation of systems composed of multiple robots (UAVs, UGVs, etc.), HPC clusters, computing-less devices, people, etc. acting as a single cohesive unit (ubiquitous supercomputing systems). The ARCHADE can be used to build and operate systems for all kind of missions
- Creation of the General-purpose Computing Mission Markup Language (GPCM2L). The language is used to describe missions to be carried out by ubiquitous supercomputing systems

Contact: Pablo Royo, Ph.D – proyo@ac.upc.edu

WORK EXPERIENCE

Researcher

APACHE project (Assessment of Performance in current ATM operations and new Concepts of operations)

09/2016 – 09/2018

Barcelona, Spain

Achievements/Tasks

- Design and development of an Air Traffic Management (ATM) High Performance Computing Simulator used to process more than one million aircraft trajectories
- Design and development of ATM Key Performance Indicators software
- Deployment of HPC cluster of computers for aircraft trajectory processing

Contact: Xavier Prats, Ph.D – xavier.prats@upc.edu

Researcher

Eötvös Loránd University Biological Physics Department, Budapest, Hungary

04/2017 – 07/2017

Budapest, Hungary

Achievements/Tasks

- Stability study on Complex Hierarchical Networks.
- Code parallelization.
- Published results in highly-ranked journal.

Contact: Tamas Vicsek, Ph.D – vicsek@hal.elte.hu

Scientific Computing Research Assistant

Colombia's Center for Bioinformatics & Computational Biology

03/2013 – 12/2014

Manizales, Colombia

High Performance Computing, Bioinformatics, Computational Biology

Achievements/Tasks

- Design and implementation of High Performance Computing (HPC) cluster for bioinformatics
- Design and development of HPC software services for bioinformatics data treatment
- Project management: Colombian biotechnology social network website development
- Code parallelization

Contact: Mauricio Rodriguez, Ph.D – mrodriguez@croplifela.org

Professor

University of Caldas

08/2013 – 12/2014

Manizales, Colombia

Achievements/Tasks

- Distributed computing class
- Linux operating system class
- Student career advise

Contact: Gustavo Isaza, Ph.D – gustavo.isaza@ucaldas.edu.co

DSI/DV/AR Intern (Master thesis)

Centre National d'Études Spatiales (CNES)

03/2012 – 08/2012

Toulouse/France

French Space Agency

Achievements/Tasks

- Master studies internship. Study and comparison of 11 resource manager/job scheduler solutions for cluster of computers, e.g. PBS pro, Torque/Maui, Open Grid Scheduler, etc. Software selection to meet organization needs.
- Company's HPC needs synthesis.
- Software development for HPC performance evaluation.

Contact: Pierre-Marie Brunet – pierre-marie.brunet@cnes.fr

WORK EXPERIENCE

Research engineer / Platform admin

Supercomputing & Scientific Calculation UIS - gridUIS-2

09/2010 - 09/2011

Supercomputing center at Industrial University of Santander (UIS)

Bucaramanga, Colombia

Achievements/Tasks

- Deployment of a High Performance Computing infrastructure composed of 100+ commodity computers
- User support for code parallelization using MPI and CUDA
- Design of software architecture for image processing application using CUDA

Contact: Daniel Sierra, Ph.D - dasierra@uis.edu.co

SELECTED PUBLICATIONS

Journal paper

The ARCADE: Ubiquitous Supercomputing for robotics. Part I: Philosophy

Author(s)

L. Camargo-Forero, P. Royo and X. Prats

2018

Robotics and Autonomous Systems

Journal paper

Towards High Performance Robotic Computing

Author(s)

L. Camargo-Forero, P. Royo and X. Prats

2018

Robotics & Autonomous Systems. Vol.107, pages 167-181

Science fiction book

The Dark Buddha - Discoveries

Author(s)

L. Camargo-Forero

2016

Amazon

<https://www.amazon.com/Dark-Buddha-Discoveries-1/dp/1535357436>

Conference paper

High Performance Robotic Computing as an enabler of cooperative flights.

Author(s)

L. Camargo-Forero, P. Royo and X. Prats.

2018

Digital Avionics System Conference.

Journal paper

Stability of glassy hierarchical networks

Author(s)

M. Zamani, L. Camargo-Forero and Tamas Vicsek

2018

New Journal of Physics 20.2: 023025

EDUCATION

Ph.D in Aerospace Science & Technology

Polytechnic University of Catalunya - BarcelonaTECH

11/2014 - Present

Master of Science in Ubiquitous Computing & Networking

Université de Nice Sophia Antipolis

10/2011 - 08/2012

Systems Engineer

Industrial University of Santander

09/2002 - 12/2010