Curriculum Vitae

Personal information

Surnames, First name	**Castelló Ferrer, Eduardo**
Address	IE University, P. de la Castellana, 259, 28029, Madrid, Spain
Telephone	+34 697246098
Email	eduardo.castello@ie.edu
Nationality	Spanish
Date of birth	12 Jan 1984
Gender	Male

Research experience

Dates	Sep 2023 - present
Position	Assistant Professor
Institution	School of Science and Technology, IE University, P. de la Castellana, 259, 28029, Madrid, Spain
Principal activities	Building a strong robotics and AI curricula and a state-of-the-art robotics lab where students and collaborators can challenge the limits of these fields, fostering impact for companies and key stakeholders.

Dates	Sep 2019 - present
Position	Research affiliate
Institution	Connection Science Group, Massachusetts Institute of Technology, 77 Mass. Ave., E14/E15, Cambridge, MA 02139-4307, USA
Principal activities	Conducting research on how blockchain-based robotics systems provide new ways to improve mobility, last-mile logistics, and health-related issues in urban areas.

Dates	Sep 2019 - Sep 2020
Position	Postdoctoral fellow
Institution	IRIDIA, Université libre de Bruxelles, Avenue Adolphe Buyl 87, 1050 Ixelles, Belgium
Principal activities	Implemented methods to encapsulate cooperative missions in real-robot systems by using blockchain-based data structures.

Dates	Sep 2017 - Sep 2019
Position	Postdoctoral fellow
Institution	Human Dynamics Group, MIT Media Lab, Massachusetts Institute of Technology, 77 Mass. Ave., E14/E15, Cambridge, MA 02139-4307, USA
Principal activities	Explored the combination of swarm robotics systems and blockchain technology to implement new security, behavior and business models.

Dates	Sep 2016 - Sep 2017
Position	Postdoctoral associate
Institution	OA Initiative, MIT Media Lab, Massachusetts Institute of Technology, 77 Mass. Ave., E14/E15, Cambridge, MA 02139-4307, USA
Principal activities	Conducted research on the synergy between robotics and controlled-environment devices to discover, analyze, and integrate new techniques for precision agriculture.

For more information, please see http://www.eduardocastello.com.

Education and training

Dates	Apr 2012 - Sep 2016
Qualification awarded	Ph.D. Eng. Robotics
Principal subjects covered	Multi-agent systems, swarm robotics, stochastic control, distributed systems
Institution	Osaka University, Japan
Level	1st - First Class Honors

Dates	Apr 2009 - Mar 2011
Qualification awarded	M.Eng. Robotics
Principal subjects covered	Advanced robotic systems, sensory information processing, pattern recognition, imaging systems
Institution	Osaka University, Japan
Level	1st - First Class Honors

Dates	Sep 2006 - Jul 2007
Qualification awarded	BSc.(Hons) Intelligent Systems
Principal subjects covered	Neural networks and genetic algorithms, data mining, fuzzy logic, scientific computing, intelligent systems programming
Institution	University of Portsmouth, UK
Level	2:1 - Upper Second Class Honors

Dates	Sep 2003 - Jun 2006
Qualification awarded	HND (Higher National Diploma). Software Engineering
Principal subjects covered	Structured programming, systems analysis, software engineering, networking, database design
Institution	ESAT (Escola Superior D'Art i Tecnologia), Spain
Level	2:1 - Upper Second Class Honors

Teaching experience

Dates	Spring term, 2024, 2025
Course names	Robotics and Automation
	Robotics and Automation Lab
Position	Lecturer
Principal subjects covered	Robot kinematics and dynamic control, computer vision, estimation and machine learning, ROS and software architecture, robot programming, etc.
Institution	IE University - School of Science and Technology, Spain

Dates	Spring term, 2024, 2025
Course name	Blockchain, Cryptocurrencies, and Fintech
Position	Lecturer
Principal subjects covered	Blockchain engineering, cryptography, smart contracts, digital signatures, zero-knowledge proofs, etc.
Institution	IE University - School of Science and Technology, Spain

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Dates	Spring term, 2024
Course name	Trends in Technology for CX
Position	Lecturer
Principal subjects covered	Survey of key technology trends for enterprise, including AI, robotics, biotech, virtual reality, internet of things, and blockchain
Institution	IE University - Business School, Spain

Dates	Sep 2017 - Feb 2018
Course name	2.12 - Introduction to robotics
Position	Lecturer and teaching assistant
Principal subjects covered	Robot kinematics and dynamic control, computer vision, estimation and machine learning, ROS and software architecture, robot programming, etc.
Institution	Massachusetts Institute of Technology (MIT) - Department of Mechanical Engineering, USA

Dates	Feb 2017 - Sep 2017
Qualification awarded	Kaufman teaching certificate
Principal subjects covered	Interactive teaching, active and constructive Learning, course design and delivery, planning and facilitating class sessions, inclusive teaching
Institution	Massachusetts Institute of Technology (MIT) - Teaching and Learning Lab, USA

Dates	Sep 2019 – Aug 2021
Student supervision	2 PhD students
Institution	IRIDIA, Université libre de Bruxelles, Belgium

Peer review and conference organization

Date	Dec 2019
Role	Main organizer
Conference	Symposium on Blockchain for Robotics and AI systems (BRAIS)
Institution	MIT Media Lab, Massachusetts Institute of Technology, USA

Date	Dec 2018
Role	Main organizer
Conference	Symposium on Blockchain for Robotics Systems (BROS)
Institution	MIT Media Lab, Massachusetts Institute of Technology, USA

Program committee member for the following international conferences:

2021 Workshop on Blockchain Applications in Robotics and Automation at the IEEE International Conference on Intelligent Robots and Systems (IROS 2021), 3rd International Workshop on Blockchain Technologies for Robotic Systems, at the IEEE International Conference on Robot & Human Interactive Communication (ROMAN 2021)

Frequent reviewer for the following JCR-indexed scientific journals:

Science Robotics, IEEE Transactions on Robotics (T-RO), IEEE Transactions on Automation Science and Engineering (T-ASE), International Journal of Robotics Research (IJRR), Nature Reviews Electrical Engineering, Frontiers in Robotics and AI, Swarm Intelligence, Bioinspiration & Biomimetics, Advanced Robotics

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Technical skills and competencies

Programming: C/C++, Java, Python, R, Go, PHP, Lisp, UNIX shell scripting, GNU make, AppleScript, SQL, DVCS (Mercurial, GIT), VCS (RCS, CVS, SVN, SCCS)

Robotics software: ROS, Player/Stage/Gazebo, Webots, OpenRTM-aist

Robotics and machine learning libraries: OpenCV, Torch, Caffe, mlpack

Computer-aided design: 3DS SolidWorks, Cadence OrCAD, SPICE, pst-circ

MATLAB AND MATLAB toolboxes: linear algebra, Fourier transforms, nonlinear numerical methods, polynomials, statistics, N-dimensional filters, visualization, neural networks, communications, control system, filter design, genetic algorithm and direct search, signal processing, system identification.

Instrumentation and control: dSPACE hardware (e.g., RTI1104) and Control Desk software, Simulink, LabVIEW and other National Instruments control and data acquisition hardware and software (e.g., MIO, SMIO, DSA, and DMM)

Selected publications

Eduardo Castello Ferrer, Ernesto Jiménez, Jose Luis Lopez-Presa and Javier Martín-Rueda. "Following Leaders in Byzantine Multirobot Systems by Using Blockchain Technology", IEEE Transactions on Robotics, 2021.

Eduardo Castello Ferrer, Thomas Hardjono, Alex Pentland and Marco Dorigo. "Secure and secret cooperation of robot swarms", Science Robotics, 2021.

Volker Strobel, **Eduardo Castello** and Marco Dorigo. "Blockchain Technology Secures Robot Swarms: A Comparison of Consensus Protocols and Their Resilience to Byzantine Robots", Frontiers in Robotics and AI, 2020.

A. L. Alfeo, **Eduardo Castello**, et al., "Urban Swarms: A new approach for autonomous waste management", 2019 International Conference on Robotics and Automation (ICRA 2019).

Eduardo Castello, Ognjen (Oggi) Rudovic, Thomas Hardjono and Alex ('Sandy') Pentland, "RoboChain: A Secure Data-Sharing Framework for Human-Robot Interaction", in the Tenth International Conference on eHealth, Telemedicine, and Social Medicine (eTELEMED), 2018, **(Best Paper Award)**.

Volker Strobel, **Eduardo Castello** and Marco Dorigo. "Managing Byzantine Robots via Blockchain Technology in a Swarm Robotics Collective Decision Making Scenario", Proceedings of the 17th Conference on Autonomous Agents and MultiAgent Systems. International Foundation for Autonomous Agents and Multiagent Systems (AAMAS 2018).

Eduardo Castello, "The blockchain: a new framework for robotic swarm systems", *in Future Technologies Conference (FTC 2018), Vancouver, Canada*, 2018.

Eduardo Castello, "A wearable general-purpose solution for Human-Swarm Interaction", *in Future Technologies Conference (FTC 2018), Vancouver, Canada*, 2018.

Eduardo Castello, Tomoyuki Yamamoto, Fabio Dalla Libera, Wenguo Liu, Alan F. T. Winfield, Yutaka Nakamura and Hiroshi Ishiguro, "Adaptive foraging for simulated and real robotic swarms: the dynamical response threshold approach", *Swarm Intelligence*, 2016.

For more information, please see http://www.eduardocastello.com.

Eduardo Castello and Y. Sinan Hanay, "Demo: A Low-cost, Highly Customizable Robotic Platform for Testing Mobile Sensor Networks", *in ACM Symposium on Mobile Ad Hoc Networking and Computing (MOBIHOC 2015), Hangzhou, China. June 22 - 25*, 2015.

Eduardo Castello, Tomoyuki Yamamoto, Yutaka Nakamura and Hiroshi Ishiguro, "Foraging Optimization in Swarm Robotic Systems based on an Adaptive Response Threshold Model", *RSJ International Journal of Advanced Robotics*, 2014.

Eduardo Castello, Tomoyuki Yamamoto, Yutaka Nakamura and Hiroshi Ishiguro, "Foraging in Real and Simulated environments for a Robotic Swarm based on an Adaptive Response Threshold Model", *in IEEE International Conference on Robotics and Automation (ICRA 2014), Multi-Robot Systems Workshop. Hong Kong, China. May 31 - June 7*, 2014.

Eduardo Castello, Tomoyuki Yamamoto, Yutaka Nakamura, Yoshio Matsumoto and Hiroshi Ishiguro, "Task Allocation for a Robotic Swarm Based on an Adaptive Response Threshold Model", *in ICCAS, International Conference on Control, Automation and Systems, 2013.* **(Student Paper Award).**

Patents

Eduardo Castello. 2015. Highly-customizable robotic platform for testing mobile sensor networks. Spanish patent application P201500298, filed April 2015. Granted August 2017.

Selected honors and awards

Date	
Jul 2024	
Grant	Proyecto Generación Conocimiento Grant offered by the Spanish Ministry of Science (150K EUR)
Date	Jul 2024
Award	Beca Leonardo offered by the BBVA Foundation (40k EUR)
Date	Jul 2023
Grant	Ramon y Cajal Grant offered by the Spanish Innovation Agency
Date	Dec 2018
Award	MISTI Global Seed Fund offered by MIT ($25k to foster MIT-Spain research collaborations)
Date	Sep 2017
Award	Marie Skłodowska-Curie Global Fellowship (MSCA-IF-GF) offered by the European Commission (10% acceptance rate)
Date	Apr 2014
Award	Yoneyama Scholarship offered by the Rotary Yoneyama Memorial Foundation (25 merit-based scholarships across all Japanese universities, awarded over a base of 25,000 students)
Date	Jul 2013
Award	Murata Overseas Scholarship Academic Award offered by the Murata Foundation (10 merit-based scholarships awarded over a base of 10,000 students)
Date	Oct 2010
Award	Monbukagakusho Research Scholarship offered by the Japanese Ministry of Education, Culture, Sports, Science and Technology, MEXT (1 of 10)

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Selected invited talks

Date	May 2024
Venue	Automation Cluster Forum,
	International Conference on Robotics and Automation (ICRA 2024) - Japan
Topic	Robotic Autonomy: A blockchain perspective
Date	May 2024
Venue	Breaking Swarm Stereotypes Workshop,
	International Conference on Robotics and Automation (ICRA 2024) - Japan
Topic	Blockchain-based swarms: past, present, and especially future
Date	Sept 2024
Venue	UBRI Connect 2024 - Zurich, Switzerland
Topic	Blockchain, Robotics, and Economic Autonomy: The Road That Led to the First Self-Employed Autonomous Robot
Date	July 2022
Venue	The Center for Radical Transformation, Chiba Institute of Technology - Japan
Topic	Gaka-chu: a self-employed autonomous robot artist
Date	Nov 2021
Venue	Redit Summit - Valencia, Spain
Topic	Trustable robotics systems: an emerging field for the SME
Date	Jul 2019
Venue	Robotics Engineering Department - WPI, USA
Topic	Trustable autonomy: creating interfaces between human and robot societies
Date	Jan 2019
Venue	CMSA Blockchain Conference - Harvard University, USA
Topic	Trustable autonomy: creating interfaces between human and robot societies
Date	Oct 2017
Venue	EmTech Europe - Toulouse, France
Topic	Designing robots to transform our way of life
Date	Jan 2016
Venue	Global Robot Expo (GREX) - Madrid, Spain
Topic	Swarm robotics: from academic research to widespread industrial use
Date	November 2013
Venue	British Consulate-General Osaka
Topic	Cognitive Robotics in Japan

Media collaborations

Dates	Oct 2014 - Dec 2016
Media institution	El País
Position	Columnist for the science and technology section

Dates	Oct 2014 - Jan 2017
Media institution	El Mundo
Position	Columnist for the innovation and entrepreneurship section

Dates	Dec 2013 - Aug 2014
Media institution	El País
Main activity	Robotics Blog

Personal skills and competencies

Native languages	Spanish, Catalan
Other languages	English (Fluent), Italian (Fluent), Japanese (Conversational)

References

Alex 'Sandy' Pentland, Professor,
Human Dynamics Group, Media Lab, Massachusetts Institute of Technology, 77 Mass. Ave., E14/E15, Cambridge, MA 02139-4307, USA
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Hiroshi Ishiguro, Professor (Ph.D. Advisor),
Graduate School of Engineering Science, Toyonaka Campus, Osaka University, 1-3 Machikaneyama, Osaka, 565-8531, Japan
TEL: +81-6-6850-6360

Kent Larson, Principal Research Scientist,
City Science Group, Media Lab, Massachusetts Institute of Technology, 77 Mass. Ave., E14/E15, Cambridge, MA 02139-4307, USA
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Yoshio Matsumoto, Group Leader,
Service Robotics Research Group, Intelligent Systems Institute, National Institute of Advanced Industrial Science and Technology (AIST), Tsukuba Central 2, 1-1-1 Umezono, Tsukuba, Ibaraki 305-8568, Japan
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