CURRICULUM VITAE

ABOUT ME

I am a PhD in Computer Science from the University of Alcalá (UAH), Alcalá de Henares, Madrid, Spain. I received the PhD in Computer Science from the UAH in 2020. Also, I received the B.Sc. Computer Science degree and the M.Sc. degree in space science & technology from the UAH, in 2015 and 2016, respectively. I'm member of the Intelligent Systems Group at UAH, where I've conducted my research since 2015.

My research is focused on autonomous multi-robot cooperation, studying cooperation paradigms where robots can deploy collective intelligent behaviors. My main research interests are multi-robot coordination and high-level planning, with particular emphasis on decision-making algorithms, optimization methods and evolutionary algorithms.

PERSONAL INFORMATION

Name	**ROPERO PASTOR, FERNANDO**
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Nationality	Spanish
Date of birth	MAY 28, 1992

WORK EXPERIENCE

• Dates	February 2019 – July 2019
• Name and address of employer	Delft University of Technology, Delft, The Netherlands
• Type of business or sector	Delft Center for Systems and Control Department
• Occupation or position held	Visiting Researcher
• Main activities and responsibilities	- Scientific research focused on task and path planning in multi-robot cooperation. - Modelling and testing optimization methods for robotic cooperation paradigms. - Designing dynamical and efficient path & task planning for multi-robot teams in search & rescue, package delivery or surveillance scenarios.
• Dates	September 2017 – Current
• Name and address of employer	University of Alcalá, Alcalá de Henares, Spain
• Type of business or sector	Department of Computer Engineering
• Occupation or position held	Scientific researcher
• Main activities and responsibilities	- Hybrid strategies between classic and modern evolutionary approaches for deploying UGV-UAV cooperation paradigms. - Discrete optimization methods and evolutionary algorithms for solving path & task planning problems such as the exploration problem or the last-mile delivery problem. - Computational geometry algorithms for smart clustering in multi-robot scenarios.

• Dates	July 2016
• Name and address of employer	ORBITAL Critical Systems, San Fernando de Henares, Spain
• Type of business or sector	Aeronautics / Space / Railways / R & D + I
• Occupation or position held	Software architect
• Main activities and responsibilities	- Designer and developer of a database system following the VMC pattern.
• Dates	September 2015 – September 2017
• Name and address of employer	University of Alcalá, Alcalá de Henares, Spain
• Type of business or sector	Department of Computer Engineering
• Occupation or position held	Postgraduate researcher
• Main activities and responsibilities	- Hybrid strategies between classic and modern evolutionary approaches for deploying UGV-UAV cooperation paradigms. - Discrete optimization methods and evolutionary algorithms for solving path & task planning problems such as the exploration problem or the last-mile delivery problem. - Computational geometry algorithms for smart clustering in multi-robot scenarios. - Mission planning for robotic cooperation in multi-agent systems. - Quantum computing: optimization models following the Ising Formulation.
• Dates	September 2014 – September 2015
• Name and address of employer	University of Alcalá, Alcalá de Henares, Spain
• Type of business or sector	Department of Computer Engineering
• Occupation or position held	University research technologist
• Main activities and responsibilities	- Technological research in robotics - Development of a ground control station for autonomous controllers. - Hardware & Software development of an unmanned aerial vehicle for artificial intelligence applications.
• Dates	June 2013 – October 2014
• Name and address of employer	Witzenmann Española S.A, Polígono Industrial del Henares, Guadalajara, Spain
• Type of business or sector	Industrial Manufacturing
• Occupation or position held	Application software developer
• Main activities and responsibilities	- Designer and developer of database systems - IT Help Desk

EDUCATION AND TRAINING

• Dates	2016-2020
• Name and type of organization providing education and training	University of Alcalá, Alcalá de Henares, Spain
• Principal subjects/occupational skills covered	Space science, technology and engineering and space projects management - PhD thesis: "Algorithms for multi-robot systems on the cooperative exploration and last-mile delivery problems"
• Title of qualification awarded	Cum Laude PhD in Space Research and Astrobiology
• Dates	2015-2016
• Name and type of organization providing education and training	University of Alcalá, Alcalá de Henares, Spain
• Principal subjects/occupational skills covered	Space science, astrophysics, high-energy physics, space technology and engineering, space project management - Experimental thesis: "An autonomous controller application for exploration unmanned aerial vehicles"
• Title of qualification awarded	Master's degree in science and Technology from Space
• Dates	2010–2015
• Name and type of organization providing education and training	University of Alcalá, Alcalá de Henares, Spain
• Principal subjects/occupational	Bachelor's in computer science engineering - Experimental thesis: "Development of a ground

skills covered	control station for autonomous controllers".
• Title of qualification awarded	Computer Science Engineer

PERSONAL SKILLS AND COMPETENCES

MOTHER TONGUE	**SPANISH**

OTHER LANGUAGES	
	ENGLISH
• Reading skills	INDEPENDENT USER
• Writing skills	INDEPENDENT USER
• Verbal skills	INDEPENDENT USER

ORGANIZATIONAL SKILLS AND COMPETENCES

- *Co-director of 1 PhD's student*
  Javier Caballero Testón, "Planning for cooperative multi-robot systems on the exploration scenario", UAH, Current

- *Tutor of 1 Master's student*
  Javier Caballero Testón, "Cooperative reactor for a planning-based autonomous control architecture", UAH, September 2019

- *Tutor of 2 Bachelor's students*
  Sergio Manzano Gonzalez, "Deliberative reactor for an autonomous control architecture", UAH, September 2018
  Daniel Menéndez Marcos, "UGV-UAV cooperative simulation in exploration missions with energy constraints", UAH, September 2017

- *Organization member of the 6th International Conference on Space Mission Challenges for Information Technology (SMC-IT), 2017.*

- *Participation on funded research projects:*

2020	*"Mejora de la gestión de recursos hospitalarios mediante la predicción de la demanda con Aprendizaje Automático y Planificación". Ministerio de Ciencia e Innovación (PID2019-109891RB-I00). Participation of Universidad de Alcalá (Computer Engineering and Nursery and Physiotherapy Departments) and Hospital Universitario Príncipe de Asturias. PI: María D. R-Moreno, PhD and Helena Hernández Martínez, PhD. 2020-2023.*
2019	*"Sistema de control autónomo colaborativo para vehículos no tripulados". Ayudas para la promoción de empleo joven e implantación de la garantía juvenil en I+D+I. Participation of Ministerio de Economía y Competitividad. PI: María D. R Moreno, PhD. 2019-2021.*
2017	*"Robotic simulation for the teaching of artificial intelligence", University of Alcalá (UAH2016/00351/001), PI: Dr. David Fernández Barrero, 2017*
2017	*"Robotics Simulation" University of Alcalá, Principal Researcher: Dr. David Fernández Barrero.*
2016	*Fall detection through triaxial accelerometer in remote care environment for dependence", University of Acalá (UAH2015/00297/001), Principal Researcher: Dr. David Fernández Barrero*
2016	*"Detección de defectos de fabricación en perfiles de PVC". Profine Iberia S.A.U. Participation of Profine Iberia and UAH. PI: María D. R-Moreno, PhD; Pablo Muñóz, PhD; David F. Barrero, PhD. 2016-2017.*
2015	*"Arquitecturas de control autónomo para vehículos no tripulados". Ayudas para la promoción de empleo joven e implantación de la garantía juvenil en I+D+I. Participation of Ministerio de Economía y Competitividad. PI: María D. R Moreno, PhD. 2015-2017.*

TECHNICAL SKILLS
AND COMPETENCES

MAIN RESEARCH TOPICS

- *Unmanned aerial and ground vehicles engineering.*
- *Multi-Robot cooperation and coordination.*
- *Collective intelligence and swarm behaviors in multi-agent systems.*
- *High-level modelling in mission planning*
- *Autonomous controllers oriented for robotic cooperation*
- *Computational geometry algorithms in multi-robot paradigms*
- *Combinatorial optimization methods*

SCIENTIFIC PUBLICATIONS

- *Author or co-author in the following journal articles in scientific publications on original investigations:*

  TERRA: A path planning algorithm for cooperative UGV–UAV exploration. Ropero, F; Muñoz, P.; and R-Moreno, M., D. Engineering Applications of Artificial Intelligence, 78: 260-272. 2 2019.

  ARIES: An Autonomous Controller For Multirobot Cooperation. Ropero, F.; Munoz,P.; and R-Moreno, M., D. IEEE Aerospace and Electronic Systems Magazine, 34(3): 40-55. 3 2019.

  MOBAR: a Hierarchical Action-Oriented Autonomous Control Architecture. Muñoz, P., R Moreno, M.D., Barrero, D.F. et al. J Intell Robot Syst 94, 745–760 (2019).

  LARES: An AI-based teleassistance system for emergency home monitoring. Ropero , F.; Vaquerizo-Hdez, D.; Muñoz, P.; Barrero, D., F.; and R-Moreno, M., D. Cognitive Systems Research, 56: 213-222. 4 2019.

  A strategical path planner for UGV-UAV cooperation in Mars Terrains. Ropero, F.; Muñoz, P.; and R-Moreno, M., D. In Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics), volume 11311 LNAI, pages 79-91, 2018.

  A versatile executive based on T-REX for any robotic domain. Ropero, F.; Muñoz, P.; and R-Moreno, M., D. In Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics), volume 11311 LNAI, pages 79-91, 2018.

  An advanced teleassistance system to improve life quality in the elderly. Ropero, F.; Vaquerizo, D.; Muñoz, P.; and R-Moreno, M., D. In Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics), volume 10350 LNCS, pages 533-542, 2017.

  A Virtual Reality Mission Planner for Mars Rovers. Ropero, F.; Munoz, P.; R-Moreno, M., D.; and Barrero, D., F. In 2017 6th International Conference on Space Mission Challenges for Information Technology (SMC-IT), volume 2017-Decem, pages 142-146, 2017.

HONOURS AND AWARDS	*Second prize at the 8th UAH Technology-Based Business Creation Ideas Contest, for the LARES Robotics Solutions business plan: advanced non-intrusive telecare system, University of Alcalá, Alcalá de Henares, Spain, 2015*
DRIVING LICENSE	Category B

Alcalá de Henares, April 06th, 2020