

Fernando Wario Vázquez

Email: fernando.wario@istc.cnr.it
ORCID iD: orcid.org/0000-0002-7805-1946
WOS ResearcherID: E-4588-2018

Academic Qualifications

Ph.D. in Computer Science (magna cum laude) 12/2017
Department of Mathematics and Computer Science, Freie Universität Berlin - Germany
Thesis: "A Computer Vision Based System for the Automatic Analysis of Social Networks in Honey Bee Colonies"

M.Sc. in Electronics and Computer Science Engineering (100/100) 09/2011
University of Guadalajara - Mexico
Thesis: "Learning Automata Algorithms Applied to Computer Vision Problems" (in Spanish)

Bachelor's Degree in Electronics and Communication Engineering (100/100) 11/2008
University of Guadalajara - Mexico
Thesis: "Video Segmentation Algorithm for Real-Time Detection of Mobile Objects" (in Spanish)

Professional Experience

Research

Researcher at Institute for Cognitive Sciences and Technologies, Italy 05/2023 –

Associate Researcher at University of Guadalajara, Mexico 11/2021 –

Associate Researcher at Institute for Cognitive Sciences and Technologies, Italy 11/2019 – 10/2021

PhD student at Freie Universität Berlin 10/2012 – 12/2017
Individual PhD scholarship (DAAD - Germany)

Teaching

University of Guadalajara - Mexico 01/2018 –

Taught courses: Communication systems I & II 02/2009 – 05/2012
Operating systems, Control engineering, Control theory II

Languages

Mother tongue: Spanish

Other languages	Reading	Writing	Listening	Speaking
English	C1	C1	C1	C1
German	B2	B2	B2	B2
Italian	B1	A2	B1	A2

Citation Metrics (10/2022)

	Google Scholar (GS)	Scopus (SC)	Web of Science (WOS)
Citations	337	212	139
h-index	8	8	7

Publications

Title/Author	GS	Cited by SC	WOS	Year
Journals				
Machine learning reveals the waggle drift’s role in the honey bee dance communication system DM Dormagen, B Wild, F Wario , T Landgraf PNAS Nexus, 2(9)	-	-	-	2023
An accurate cluster chaotic optimization approach for digital medical image segmentation O Avalos, E Ayala, F Wario , M Pérez-Cisneros Neural Computing and Applications, 1-35	4	4	3	2021
Soundscape Indices: New Features for Classifying Beehive Audio Samples MZ Sharif, F Wario , N Di, R Xue, F Liu Sociobiology 67(4), 566-571	17	15	14	2020
Tracking all members of a honey bee colony over their lifetime using learned models of correspondence F Boenish, B Rosemann, B Wild, F Wario , T Landgraf Frontiers in Robotics and AI 5,36	42	26	22	2018
Automatic detection and decoding of honey bee waggle dances F Wario , B Wild, R Rojas, T Landgraf PloS one 12(12)	44	22	18	2018

Automatic methods for long-term tracking and the detection and decoding of communication dances in honey bees F Wario , B Wild, MJ Couvillon, R Rojas, T Landgraf Frontiers in Ecology and Evolution 3, 103	81	40	19	2015
Fast algorithm for multiple-circle detection on images using learning automata E Cuevas, F Wario , V Osuna-Enciso, D Zaldivar, M Pérez-Cisneros IET Image Processing 6 (8), 1124-1135	51	37	24	2012
Circle detection on images using learning automata E Cuevas, F Wario , D Zaldivar, M Pérez-Cisneros IET computer vision 6 (2), 121-132	32	16	13	2012
Automatic multiple circle detection based on artificial immune systems E Cuevas, V Osuna-Enciso, F Wario , D Zaldivar, M Pérez-Cisneros Expert Systems with Applications 39 (1), 713-722	44	41	26	2012
Detección de primitivas circulares usando un algoritmo inspirado en el electromagnetismo E Cuevas, D Oliva, V Osuna-Enciso, F Wario Ingeniería, investigación y tecnología 12 (4), 469-485	1	-	-	2011
Segmentación y detección de glóbulos blancos en imágenes usando Sistemas Inmunes Artificiales E Cuevas, V Osuna-Enciso, D Oliva, F Wario , D Zaldivar Revista mexicana de ingeniería biomédica 31 (2), 119-134	2	-	-	2010
Book Chapters				
Bioinspired Algorithms F Wario , O Avalos-Alvarez, J Gálvez-Rodríguez In: Torres-García. (eds) Biosignal Processing and Classification Using Computational Learning and Intelligence Biomedical Engineering, Elsevier	2	1	-	2021
Circle detection on images using learning automata E Cuevas, F Wario , D Zaldivar, M Pérez-Cisneros In: Yang XS. (eds) Artificial Intelligence, Evolutionary Computing and Metaheuristics, 545-570 Studies in Computational Intelligence, vol 427, Springer, Berlin, Heidelberg	11	8	-	2013
Conference Proceedings				
Motion Dynamics of Foragers in Honey Bee Colonies F Wario , B Wild, D Dormagen, T Landrag, V Trianni International Conference on Swarm Intelligence (ANTS 2020) Lecture Notes in Computer Science, 2020, 12421 LNCS, 203-215	1	1	-	2020

Visual Registration and Tracking for Traffic Monitoring 3 1 - 2015
S Vega-Maldonado, **F Wario**, J Arámbaro-Lizárraga, M
Pérez-Cisneros, M Cedano-Olvera
2015 IEEE First International Smart Cities Conference (ISC2), 1-6

Awards and Distinctions

- **EU - MUR - (IT)** (05/2023 - 04/2025) - Research Project funded by the EU - NextGenerationEU within the PNRR
- **CONACYT - (MX)** (01/2021 - 12/2024) - Member of Mexico's National Research System (SNI).
- **CONACYT - (MX)** (11/2019 - 10/2021) - Individual postdoctoral grant
- **DAAD STIBET-Program - (DE)** (09/2017 - 11/2017) - Scholarship for international doctoral candidates.
- **FU-Bright Mobility - (DE)** (09/2016 - 10/2016) - Scholarship for research stay abroad.
- **DAAD - (DE)** (10/2012 - 06/2016) - Scholarship to conduct Ph.D. studies in Germany.
- **CONACYT - (MX)** (06/2010 - 08/2010) - Scholarship for research stay abroad.
- **CONACYT - (MX)** (09/2008 - 08/2010) - Scholarship to conduct Master studies in Mexico.
- **Chamber of Commerce, Guadalajara - (MX)** (06/2009) - Juan I. Matute Prize for bachelor thesis in technology.
- **ANIEI - (MX)** (10/2008) - Winner of ANIEI's national contest of bachelor theses in computer science.

Professional Presentations

- Proseminar in Neuroscience – University of Guadalajara (MX), 11/11/2020
- Twelfth International Conference on Swarm Intelligence – ANTS 2020 (ES), 28/10/2020
- Collective Information Processing, Workshop – Humboldt University (DE), 04/03/2020
- Seminar on Ecology – National Autonomous University of Mexico (MX), 29/08/2019
- Seminar on Engineering – ITESM (MX), 04/10/2018
- ISTC Seminar – Institute for Cognitive Sciences and Technologies-CNR (IT), 18/10/2016
- Proseminar in Neuroscience – University of Guadalajara (MX), 10/12/2014
- International Seminar on Computer Science – Complutense University of Madrid (ES), 12/05/2011
- International Seminar on Computer Science – National Polytechnic Institute of Mexico (MX), 16/12/2010
- International Conference on Computer Science and Informatics – ANIEI (MX), 03/10/2008

Dissemination Activity

- Mexican Week of Science and Technology – Mexican Embassy (DE), 06/07/2016
- Biotech Covention – University of Hamburg (DE), 10/10/2015
- HPI Future SOC Lab Day – Hasso Platner Institute (DE), 21/06/2013

Professional Activities

Peer Reviewing Activities:

International Journals: Applied Mathematical Modelling - Elsevier, Applied Soft Computing - Elsevier, Biomedical Engineering - Elsevier, Swarm Intelligence - Springer, Artificial Intelligence Review - Springer, Mathematical Problems in Engineering - Hindawi.

International Conferences: Living Machines: Conference on Biomimetic and Biohybrid Systems, IEEE International Conference on Robotics and Automation (ICRA).

International Research Projects Proposals: Generic Call for Proposals (AAPG), French National Research Agency (ANR).

Organisation of Conferences/Meetings:

Doctoral consortium chair, LXCV Workshop @ International Conference on Computer Vision 2021

Program committee chair, LXCV Workshop @ European Conference on Computer Vision 2022

Member of the program committee, Mexican Conference on Artificial Intelligence 2022

Member of the program committee, Mexican Conference on Pattern Recognition 2022

Active Collaborations

- **Dr. Vito Trianni**, Institute for Cognitive Sciences and Technologies, CNR (IT).
Research Theme: Modelling of motion dynamics of pre/post-dance trajectories in honey bee colonies.
- **Dr. Tim Landgraf**, Department of Mathematics and Computer Science, Freie Universität Berlin (DE).
Research Theme: Analysis of social networks on honey bee colonies.
- **Dr. Ricardo Ramirez**, Biological Control Lab, University of Guadalajara (MX).
Research Theme: Development of a computer vision based system to track activity of parasitoid wasps.
- **Dr. Omar Mendoza**, Postgraduate Program in Engineering, ITESM (MX).
Research Theme: Machine learning and meta-heuristic techniques on the analysis of EEG data.
- **Dr. Omar Avalos, Dr. Jorge Gálvez**, Department of Electronic Engineering, University of Guadalajara (MX).
Research Theme: Meta-heuristic optimization techniques and their applications on computer vision.