



INSTITUTE FOR SYSTEMS AND ROBOTICS



Annual Report – 2019

Lisbon Pole

***Torre Norte,
Piso 7 IST,
Av. Rovisco Pais
1049 – 001 Lisboa
Portugal***

Tel. + 351 21 841 82 89

<http://www.isr.tecnico.ulisboa.pt>

Fax. + 351 21 841 82 91

1. EXECUTIVE SUMMARY

During the year of 2019 there were no research and technological activities taking place in the framework of the Lisbon Pole of ISR, nor were financed through ISR (NIF 502 854 227). All the research activities were carried out in the context of the research unit ISR/IST where all contracts and activities took place at Instituto Superior Técnico.

For informative purposes only, we describe the scientific publications and doctoral theses that were produced by the research group hosted at the Instituto Superior Técnico, in spite of the fact that none of these activities were developed in the context the Lisbon Pole of ISR.

Contents

1. EXECUTIVE SUMMARY	2
2. PUBLICATIONS	3
A. International Journals,	3
B. International Conferences,.....	6
C. Books,.....	10
D. Book Chapters,	10
E. PhD Theses	10

2. PUBLICATIONS

A. International Journals,

- [1] Martim Brandão, Rui Figueiredo, Kazuki Takagi, Alexandre Bernardino, Kenji Hashimoto, Atsuo Takanishi, Placing and scheduling many depth sensors for wide coverage and efficient mapping in versatile legged robots, *The International Journal of Robotics Research*, 2019
- [2] Joel Reis, Pedro Batista, Paulo Oliveira, Carlos Silvestre, Nonlinear Observer on $SO(3)$ for Attitude Estimation on Rotating Earth using Single Vector Measurements, *IEEE Control Systems Letters*, vol. 3, no. 2, pp. 392-397, 2019
- [3] Joel Reis, Pedro Batista, Paulo Oliveira, Carlos Silvestre, Kalman filter cascade for attitude estimation on rotating Earth, *IEEE/ASME Transactions on Mechatronics*, 2019
- [4] Rui Antonio, Bruno da Silva, João Rodrigues, Mirian Tavares, The Lives of Others: An Interactive Installation, *International Journal of Creative Interfaces and Computer Graphics (IJCICG)* 9(1), 2019
- [5] João Rodrigues, Célia Ramos, Joao Pereira, João Sardo, Pedro Cardoso, Mobile Five Senses Augmented Reality System: Technology Acceptance Study, *IEEE ACCESS*, in *IEEE Access*, vol. 7, pp. 163022-163033, 2019
- [6] Tiago Valentim, Rita Cunha, Paulo Oliveira, David Cabecinhas, Carlos Silvestre, Multi-vehicle Cooperative Control for Load Transportation, *21st IFAC Symposium on Automatic Control in Aerospace ACA 2019*, vol. 52, 2019, pp. 358–363, 2019
- [7] Joel Reis, Pedro Batista, Paulo Oliveira, Carlos Silvestre, Attitude estimation using high-grade gyroscopes, *Control Engineering Practice*, vol. 92, 2019
- [8] Zhiqi Tang, Rita Cunha, Tarek Hamel, Carlos Silvestre, Aircraft landing using dynamic two-dimensional image-based guidance control, *IEEE Transactions on Aerospace and Electronic Systems*, vol. 55, no. 5, pp. 2104–2117, 2019
- [9] Nuno Barroso Monteiro, João Barreto, José Gaspar, Standard Plenoptic Cameras Mapping to Camera Arrays and Calibration based on DLT, *IEEE Transactions on Circuits and Systems for Video Technology (TCSVT)*, 2019
- [10] O. Favrod, Janir Cruz, M. Roinishvili, Patrícia Figueiredo, M. Herzog, E. Chkonia, Ekaterine Berdzenishvili, Andreas Brand, Electrophysiological Correlates of Visual Backward Masking in Patients with Major Depressive Disorder., *Psychiatry Research: Neuroimaging*, vol.294, 2019
- [11] Daniela Medley, Carlos Santiago, Jacinto Nascimento, Deep Active Shape Model for Robust Object Fitting, *IEEE Transactions on Image Processing*, 2019
- [12] gan yu, David Cabecinhas, Rita Cunha, Carlos Silvestre, Nonlinear backstepping control of a quadrotor-slung load system, *IEEE/ASME Transactions on Mechatronics*, vol. 24, no. 5, pp. 2304–2315, 2019
- [13] Pedro Cruz, Pedro Batista, A solution for the attitude determination of three-vehicle heterogeneous formations, *Aerospace Science and Technology*, vol. 93, 2019
- [14] J. Pinto, Chappell MA, Okell TW, Mezue M, Segerdahl AR, I. Tracey, Vilela P, Patrícia Figueiredo, Calibration of Arterial Spin Labeling Data – Potential Pitfalls in Postprocessing, *Magnetic Resonance in Medicine* 83, pp.1222-1234, 2019
- [15] Pedro Ótão Pereira, Rita Cunha, David Cabecinhas, Carlos Silvestre, Paulo Oliveira, A 3-d trailer approach to leader-following formation control, *IEEE Transactions on Control Systems Technology*, pp. 1–17, 2019
- [16] Bruno Lacerda, Pedro Lima, Petri net based multi-robot task coordination from temporal logic specifications, *Robotics and Autonomous Systems*, Vol. 122, 103289, 2019 - PDF
- [17] Pedro Lima, Carlos Azevedo, Emilia Brzozowska, João Cartucho, Tiago Dias, Joao Goncalves, Mithun Kinarullathil, Guilherme Lawless, Oscar Lima, Rute Luz, Pedro Miraldo, Enrico Piazza, Miguel Silva, Tiago Veiga, Rodrigo Ventura, SocRob@Home: Integrating AI Components in a Domestic Robot System, *KI - Künstliche Intelligenz (2019)*, 2019
- [18] Gonçalo Cruz, Alexandre Bernardino, Learning Temporal Features for Detection on Maritime Airborne Video Sequences Using Convolutional LSTM, *IEEE Transactions on Geoscience and Remote Sensing (TGRS)*, Vol. 57, issue 9, pp. 6565 – 6576, 2019

- [19] Francisco Rego, António Pascoal, António Pedro Aguiar, Colin Jones, Distributed State Estimation for Discrete-time Linear Time Invariant Systems: A Survey, *Annual Reviews of Control*, Vol. 48, pp. 36-56, 2019
- [20] Meysam Basiri, Enrico Piazza, M. Matteucci, Pedro Lima, Benchmarking Functionalities of Domestic Service Robots Through Scientific Competitions, *KI - Künstliche Intelligenz (2019)*, 2019
- [21] Pedro Batista, Robustness to measurement noise of a globally convergent attitude observer with topological relaxations, *Nonlinear Dynamics*, vol. 98, no.1, pp. 589-600, 2019
- [22] gan yu, David Cabecinhas, Rita Cunha, Carlos Silvestre, Quadrotor trajectory generation and tracking for aggressive maneuvers with attitude constraints, *21st IFAC Symposium on Automatic Control in Aerospace ACA 2019*, vol. 52, pp. 55-60, 2019
- [23] Jaeseok Kim, Nino Cauli, Pedro Vicente, Bruno Damas, Alexandre Bernardino, José Santos-Victor, Filippo Cavallo, Cleaning tasks knowledge transfer between heterogeneous robots: a deep learning approach, *Journal of Intelligent & Robotic Systems* pp 1-15, 2019
- [24] Pedro Batista, Long Baseline Navigation with Explicit Pseudo-Range Clock Offset and Propagation Speed Estimation, *European Journal of Control*, vol. 49, p.p. 116-130, 2019
- [25] Wei Xie, David Cabecinhas, Rita Cunha, Carlos Silvestre, Robust motion control of an underactuated hovercraft, *IEEE Transactions on Control Systems Technology*, vol. 27, no. 5, pp. 2195-2208, 2019
- [26] Carlos Fernandes, Nuno Fachada, Juan Merelo, Agostinho Rosa, Steady state particle swarm, *PeerJ Computer Science* 5: e202, 2019
- [27] David Cabecinhas, Rita Cunha, Carlos Silvestre, A trajectory tracking control law for a quadrotor with slung load, *Automatica*, vol. 106, pp. 384-389, 2019
- [28] YuFan Peng, Chi Man Wong, Ze Wang, Feng Wan, Yong Hu, Agostinho Rosa, Fatigue Evaluation Using Multi-Scale Entropy of EEG In SSVEP-Based BCI, *IEEE Access - DATA-ENABLED INTELLIGENCE FOR DIGITAL HEALTH*, 2019
- [29] Rui Figueiredo, Atabak Dehban, Plinio Moreno, Alexandre Bernardino, José Santos-Victor, Helder Araujo, A robust and efficient framework for fast cylinder detection, *Robotics and Autonomous Systems*, Vol. 117, pp. 17, 2019 - PDF
- [30] Wenya Nan, Ana Dias, Agostinho Rosa, Neurofeedback Training for Cognitive and Motor Function Rehabilitation in Chronic Stroke: Two Case Reports, *Frontiers in Neurology - STROKE*, 2019
- [31] Ignacio Enrique Llanez Caballero, Victor R. Ramirez, Francisco R. del Rio, António Pascoal, Optimized design of an autonomous underwater vehicle, for exploration in the Caribbean Sea, *Ocean Engineering*, Vol. 187, 2019
- [32] Rute Luz, José Corujeira, Laurent Grisoni, Frédéric Giraud, José Luís Silva, Rodrigo Ventura, On the Use of Haptic Tablets for UGV Teleoperation in Unstructured Environments: System Design and Evaluation, *IEEE Access* Vol. 7, pp. 95443 - 95454, 2019
- [33] Jaeseok Kim, Anand Mishra, Raffaele Limosani, Marco Scafuro, Nino Cauli, José Santos-Victor, Barbara Mazzolai, Filippo Cavallo, Control strategies for cleaning robots in domestic applications: A comprehensive review, *International Journal of Advanced Robotic Systems (IJARS)*, vol. 16, issue 4, 2019
- [34] Martina Čaić, João Avelino, Dominik Mahr, Gaby Odekerken-Schröder, Alexandre Bernardino, Robotic Versus Human Coaches for Active Aging: An Automated Social Presence Perspective, *International Journal of Social Robotics*, 2019
- [35] Athanasios Vourvopoulos, Rodolfo Abreu, Patrícia Figueiredo, S. Bermúdez i Badia, Efficacy and Brain Imaging Correlates of an Immersive Motor Imagery BCI-driven VR System for Upper Limb Motor Rehabilitation: A Clinical Case Report, *Frontiers in Human Neuroscience*, 2019
- [36] Pedro Casau, Rita Cunha, Ricardo G. Sanfelice, Carlos Silvestre, Hybrid control for robust and global tracking on a smooth manifold, *IEEE Transactions on Automatic Control*, pp. 1-1, 2019
- [37] Pedro Cardoso, João Rodrigues, Joao Pereira, Sergey Nogin, Joana Lessa, Célia Ramos, Roman Bajireanu, Miguel Gomes, Paulo Bica, Cultural heritage visits supported on visitors' preferences and mobile devices, *Universal Access in the Information Society*, 2019

- [38] Alicja Wasik, Pedro Lima, Alcherio Martinoli, A Robust Localization System for Multi-Robot Formations Based on an Extension of a Gaussian Mixture Probability Hypothesis Density Filter, *Journal of Autonomous Robots* Vol. 43 Issue 5, 2019
- [39] Diogo Gomes, João Paulo Costeira, João Saúde, Three-dimensional registration and shape reconstruction from depth data without matching: A PDE approach, *Portugaliae Mathematica*, European Mathematical Publishing House, 2019
- [40] Monica Ekal, Rodrigo Ventura, On the Accuracy of Inertial Parameter Estimation of a Free-Flying Robot While Grasping an Object, *Journal of Intelligent & Robotic Systems*, vol. 98, pp 153–163, 2019
- [41] Francisco Melo, Alberto Sardinha, David Belo, Marta Couto, Miguel Faria, Anabela Farias, H. Gamboa, Cátia Jesus, Mithun Kinarullathil, Pedro Lima, Luís Luz, André Mateus, Isabel Melo, Plinio Moreno, Daniel Osório, A. Paiva, Jhielson Pimentel, João Rodrigues, Pedro Sequeira, Rubén Solera-Ureña, Miguel Vasco, Manuela Veloso, Rodrigo Ventura, Project INSIDE: Towards Autonomous Semi-Unstructured Human-Robot Social Interaction in Autism Therapy, *Journal Artificial Intelligence in Medicine* Volume 96, Pages 198-216, 2019
- [42] Chi Wong, Feng Wan, Boyu Wang, Ze Wang, Wenya Nan, Ka Lao, Peng Mak, Mang I Vai, Agostinho Rosa, Learning Across Multi-Stimulus Enhances Target Recognition Methods in SSVEP-based BCIs, *Journal of Neural Engineering*, May, 2019
- [43] Nuno Leite, Fernando Melicio, Agostinho Rosa, A fast simulated annealing algorithm for the examination timetabling problem, *Expert Systems with Applications* Vol. 122, pp 137-151, May 2019
- [44] Athira Nambiar, Alexandre Bernardino, Jacinto Nascimento, Gait-based Person Re-identification: A Survey, *ACM Computing Surveys*, vol. 52, issue 2, 2019
- [45] Matthieu Ruthven, Andreia Freitas, Redha Boubertakh, Marc E. Miquel, Application of radial GRAPPA techniques to single-and multislice dynamics speech MRI using a 16-channel neurovascular coil, *Magnetic resonance in medicine* Vol 82 (3) p 948-958, 2019
- [46] Joel Reis, Pedro Batista, Paulo Oliveira, Carlos Silvestre, Calibration of High-Grade Inertial Measurement Units using a Rate Table, *IEEE Sensors Letters*, Vol. 3, No. 4, 2019
- [47] Pedro Batista, Carlos Silvestre, Paulo Oliveira, Attitude Observer on the Special Orthogonal Group with Earth Velocity Estimation, *Systems & Control Letters*, Vol. 126, pp. 33-39, 2019
- [48] Jayakorn Vongkulbhisal, Fernando De la Torre, João Paulo Costeira, Discriminative Optimization: Theory and Applications to Computer Vision, *IEEE transactions on pattern analysis and machine intelligence*, Vol 41, Issue 4, pp 829-843, 2019
- [49] Pedro Batista, Carlos Silvestre, Paulo Oliveira, Globally Exponentially Stable Attitude Observer with Earth Velocity Estimation, *Asian Journal of Control*, vol. 21, no. 4, pp. 1409-1422, 2019
- [50] Nelson Perdigão, Agostinho Rosa, Dark Proteome Database: Studies on Dark Proteins, *MDPI High-Throughput* 8, no. 2: 8., 2019
- [51] Pedro Lourenço, Pedro Batista, Paulo Oliveira, Carlos Silvestre, Strategies for uncertainty optimization through motion planning in GES sensor-based SLAM, *Robotics and Autonomous Systems*, vol. 113, pp. 38-55, 2019
- [52] Lara Briñón, Alexandre Seuret, António Pascoal, Circular formation control for cooperative target tracking with limited information, *Journal of the Franklin Institute*, Vol. 356, Issue 4, Pages 1771-1788, 2019
- [53] André Mateus, David Ribeiro, Pedro Miraldo, Jacinto Nascimento, Efficient and robust Pedestrian Detection using Deep Learning for Human-Aware Navigation, *Robotics and Autonomous Systems*, Vol. 113, pp 23-37, 2019
- [54] Rogério Largo, Cecilia Lopes-Conceicao, Karen Spruyt, Christian Guilleminault, Yuan Wang, Agostinho Rosa, Visual and Automatic Classification of the Cyclic Alternating Pattern in Sleep EEG, *Brazilian Journal of Medical and Biological Research - BJMBR* 2019 52(3), 2019
- [55] António Simões, João Xavier, FADE: Fast and Asymptotically Efficient Distributed Estimator for Dynamic Networks, *IEEE Transactions on Signal Processing*, Vol. 67, No. 8, pp. 2080-2092, 2019
- [56] Rodolfo Abreu, Alberto Leal, Patrícia Figueiredo, Identification of epileptic brain states by dynamic functional connectivity analysis of simultaneous EEG-fMRI, *Scientific Reports* Vol. 24, No. 9(1), Article 638, 2019

- [57] Rafael Miranda, Chiharu Murata, Olivero Bruni, Agostinho Rosa, Gerardo Ruiz, Carlos Montoya, Jose Zamorano, Enrique Esqueda-León, Charly Castillo, Javier Moctezuma, Emilio Salazar, Adrian Poblano, Javier Velazquez-Moctezuma, Cyclic alternating pattern in infants with congenital hypothyroidism, *Brain and Development* Vol. 41, Issue 1, January, pp 66-71, 2019
- [58] Giovanni Saponaro, Lorenzo Jamone, Alexandre Bernardino, Giampiero Salvi, Beyond the Self: Using Grounded Affordances to Interpret and Describe Others' Actions, *IEEE Transactions on Cognitive and Developmental Systems (TCDS)*, 2019
- [59] M. Cecilia Lopes, Karen Spruyt, Leticia Azevedo-Soster, Agostinho Rosa, Christian Guilleminault, Reduction in Parasympathetic Tone During Sleep in Children with Habitual Snoring, *Frontiers in Neuroscience* 12:997, section Autonomic Neuroscience, 2019
- [60] Mainak Biswas, Venkatanareshbabu Kuppili, Luca Saba, Damodar Edla, Harman S. Suri, Elisa Cuadrado-Godia, John R. Laird, Rui Marinhoe, João Sanches, Andrew Nicolaidis, Jasjit S. Suri, State-of-the-art review on deep learning in medical imaging, *Frontiers in Bioscience*, Vol. 24 pp. 392-426, 2019

B. International Conferences,

- [1] Nuno Monteiro, José Gaspar, Generalized Camera Array Model for Standard Plenoptic Cameras, *Iberian Robotics Conference, (ROBOT 2019)*. Porto, Portugal, 2019
- [2] José Rosa, Meysam Basiri, Cooperative Audio-Visual System for Localizing Micro Aerial Robots, *Proc. IEEE International Conference on Intelligent Robots and Systems (IROS)*, Macau, China, 2019
- [3] Atabak Dehban, João Borrego, Rui Figueiredo, Plinio Moreno, Alexandre Bernardino, José Santos-Victor, The Impact of Domain Randomization on Object Detection: A Case Study on Parametric Shapes and Synthetic Textures, *Proc. of IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, Macau, China, 2019
- [4] Manuel Simas, Bruno Guerreiro, Pedro Batista, Preliminary Results on 2-D Simultaneous Localization and Mapping for Aerial Robots in Dynamics Environments, *Proc. of 7th International Conference on Robot Intelligence Technology and Applications (RITA)*, 2019
- [5] Ricardo Veiga, João Rodrigues, Indoor Wall Detection, Tracking and Superimposition, *Proc. 25th edition of the Portuguese Conference on Pattern Recognition*, Porto, Portugal, pp. 125-126, 2019
- [6] Beatriz Ferreira, João Paulo Costeira, Ricardo Gamelas Sousa, Liang-Yan Gui, João Pedro Gomes, Pose Guided Attention for Multi-label Fashion Image Classification, *Proc. of International Conference on Computer Vision (ICCV) Workshop*, Seoul, South Korea, 2019
- [7] Ricardo Veiga, Joao Pereira, João Sardo, Roman Bajireanu, Pedro Cardoso, João Rodrigues, Augmented Reality Indoor Environment Detection: Proof-of-Concept, *WSEAS Transactions on Mathematics*, ISSN / E-ISSN: 1109-2769 / 2224-2880, Vol. 18, Art. #29, pp. 211-222 for 3rd International Conference on Applied Mathematics and Computer Science (AMACS 2018) in London, UK, 2019
- [8] Nuno Duarte, Mirko Rakovic, José Santos-Victor, Coupling of Arm Movements during HRI: the handover case, *IEEE International Conference on Robot & Human Interactive Communication (Ro-Man)*. New Delhi, India, 2019
- [9] Ana Rita Oliveira, Patrícia Figueiredo, Alberto Leal, Rita Gouveia Nunes, Evaluation of thalamo-cortical connectivity in pediatric patients with unilateral thalamic lesions using Diffusion-Weighted MRI, *Proc. of XV Mediterranean Conference on Medical and Biological Engineering and Computing – MEDICON 2019*, 2019
- [10] Laura Santos, Alice Geminiani, Ivana Olivieri, José Santos-Victor, Alessandra Pedrocchi, CopyRobot: Interactive Mirroring Robotics Game for ASD Children, *Proc. of XV Mediterranean Conference on Medical and Biological Engineering and Computing – MEDICON 2019*, Coimbra, Portugal, 2019
- [11] Catarina Barata, Mario Figueiredo, Jorge Salvador Marques, Multiple Motion Fields for Multiple Types of Agents, *Proc. IEEE International Conference on Image Processing (ICIP)*. Taipei, Taiwan, 2019 - **PDF**

- [12] João Carvalho, Manuel Marques, João Paulo Costeira, Recovery of Subspace Structure from High-Rank Data with Missing Entries, Proc. of IEEE International Conference on Image Processing, Taipei, Taiwan, 2019
- [13] Athanasios Vourvopoulos, Evangelos Niforatos, Michail Giannakos, EEGlass: An EEG-Eyeware Prototype for Ubiquitous Brain-Computer Interaction, UbiComp/ISWC 2019, London, United Kingdom, 2019
- [14] Bahareh Sabetghadam, Alfonso Alcantara, Jesús Capitán, Rita Cunha, Anibal Ollero, António Pascoal, Optimal Trajectory Planning for Autonomous Drone Cinematography, 2019 European Conference on Mobile Robots (ECMR), 2019
- [15] Arturo Torres-González, Alfonso Alcantara, Vasco Sampaio, Jesús Capitán, Bruno Guerreiro, Rita Cunha, Anibal Ollero, Distributed Mission Execution for Aerial Cinematography with Multiple Drones, EUSIPCO. Satellite Workshop on Signal Processing, Computer Vision and Deep Learning for Autonomous Systems, La Coruña, Spain, 2019
- [16] Ioannis Mademlis, Arturo Torres-González, Jesús Capitán, Rita Cunha, Bruno Guerreiro, Alberto Messina, Fulvio Negro, Cedric le Barz, Tiago Gonçalves, Anastasios Tefas, Ioannis Pitas, A Multiple-UAV Software Architecture for Autonomous Media Production, EUSIPCO. Satellite Workshop on Signal Processing, Computer Vision and Deep Learning for Autonomous Systems, La Coruña, Spain, 2019
- [17] Carlos Santiago, Duarte M Alves, Beatriz Ferreira, João Carvalho, Alberto Messina, João Paulo Costeira, Video Analysis Based on Human Pose for Unsupervised Summarization and Retrieval, Proc. of International Conference on Content-Based Multimedia Indexing (CBMI), Dublin, Ireland, 2019
- [18] Mariana Moreira, Endre Papp, Rodrigo Ventura, Interception of Non-Cooperative UAVs, Proc. of IEEE International Symposium on Safety, Security, and Rescue Robotics (SSRR-19), pp 120–125, 2019
- [19] Marta Marques, Bruno Guerreiro, Rita Cunha, Carlos Silvestre, Trajectory planning and control for drone replacement for multidrone cinematography, 21st IFAC Symposium on Automatic Control in Aerospace (ACA 2019), 2019
- [20] Kagan Erunsal, Alcherio Martinoli, Rodrigo Ventura, Decentralized Nonlinear Model Predictive Control for 3D Formation of Multirotor Micro Aerial Vehicles with Relative Sensing and Estimation, Proc. of International Symposium on Multi-Robot and Multi-Agent Systems (MRS), pp 176–178, 2019, 2019
- [21] Atabak Dehban, Carlos Cardoso, Pedro Vicente, Alexandre Bernardino, José Santos-Victor, Robotic Interactive Physics Parameters Estimator (RIPPE), Proc. of IEEE International Conference on Developmental and Learning and on Epigenetic Robotics (ICDL-EpiRob). Oslo, Norway, 2019
- [22] Teresa Bucho, Gina Caetano, Athanasios Vourvopoulos, Floriana Accoto, Ines Esteves, S. Bermúdez i Badia, Agostinho Rosa, Patrícia Figueiredo, Comparison of Visual and Auditory Modalities for Upper-Alpha EEG-Neurofeedback, Proc. 41st Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC 2019), 2019
- [23] Alice Geminiani, Laura Santos, Claudia Casellato, Andrea Farabbi, Nicola Farella, José Santos-Victor, Ivana Olivieri, Alessandra Pedrocchi, Design and validation of two embodied mirroring setups for interactive games with autistic children using the NAO humanoid robot, Proc. of 41st Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC), 2019
- [24] Carlos Fernandes, Agostinho Rosa, Juan L. J. Laredo, Juan Merelo, Genealogical patterns in evolutionary algorithms, Proc. of the Genetic and Evolutionary Computation Conference Companion, pp 283–284, 2019
- [25] Cristiano Cabrita, Jânio Monteiro, Pedro Cardoso, Improving energy efficiency in smart-houses by optimizing electrical loads management, 1st International Conference on Energy Transition on the Mediterranean Area, SyNERGY MED, Cagliari, Italy, 2019
- [26] João Antunes, Alexandre Bernardino, Asim Smailagic, Daniel Siewiorek, Weighted Multisource Tradaboost, Iberian Conference on Pattern Recognition and Image Analysis (IbPRIA 2019). Madrid, Spain, 2019
- [27] Tiago Veiga, Miguel Silva, Rodrigo Ventura, Pedro Lima, An Hierarchical Approach to Active Semantic Mapping Using Probabilistic Logic and Information Reward POMDP, Proc. of ICAPS 2019 - 29th International Conference on Automated Planning and Scheduling, Berkeley, USA, 2019
- [28] Nuno Duarte, Mirko Rakovic, José Santos-Victor, Biologically Inspired Controller of Human Action Behaviour for a Humanoid Robot in a Dyadic Scenario, IEEE EUROCON 2019 -18th International Conference on Smart Technologies. Novi Sad, Serbia, 2019

- [29] Nuno Monteiro, José Gaspar, Standard Plenoptic Camera Calibration for a Range of Zoom and Focus Levels, Iberian Conference on Pattern Recognition and Image Analysis (IbPRIA 2019). Madrid, Spain, 2019
- [30] Pedro Pina, Jorge Salvador Marques, Sandra Heleno, Detection of stone circles in periglacial regions of Antarctica in UAV datasets, Iberian Conference on Pattern Recognition and Image Analysis. Madrid, Spain, 2019
- [31] Beatriz Ferreira, Catarina Barata, Jorge Salvador Marques, What is the Role of Annotations in the Detection of Dermoscopic Structures?, Conference on Pattern Recognition and Image Analysis. Madrid, Spain, 2019
- [32] Ana Portelo, Andrea Cavallaro, Catarina Barata, Jorge Salvador Marques, Description and Recognition of Activity Patterns Using Sparse Vector Fields, Iberian Conference on Pattern Recognition and Image Analysis. Madrid, Spain, 2019
- [33] Hemaxi Narotamo, João Sanches, Margarida Silveira, Segmentation of cell nuclei in fluorescence microscopy images using deep learning, Proc. of 9th Iberian Conference on Pattern Recognition and Image Analysis (IbPRIA 2019), Madrid, Spain, 2019
- [34] Saber Sarbazvatan, Rodrigo Ventura, Francisco F. Esteves, Lima, S. Q., João Sanches, A novel graph-based approach for seriation of mouse brain cross-section from images, Proc. of 9th Iberian Conference on Pattern Recognition and Image Analysis (IbPRIA 2019), Madrid, Spain, 2019
- [35] Tiago Silva, Pedro Batista, Long Baseline Aided Inertial Navigation System with Clock Offset Estimation, Proc. of the 2019 European Control Conference, Naples, Italy, pp. 4022-4027, 2019
- [36] Pedro Miraldo, Surojit Saha, S Ramalingam, Minimal Solvers for Mini-Loop Closures in 3D Multi-Scan Alignment, Proc. of IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR), 2019
- [37] Heitor Cardoso, Alexandre Bernardino, Mafalda Sanches, Luísa Loureiro, Exergames and their benefits in the perception of the Quality of Life and Socialization on institutionalized older adults, Experiment International Conference (Exp.at'19), Funchal, Madeira Island, Portugal, 2019
- [38] H. Sousa, E. R. Gouveia, M.S. Cameirão, A. Goncalves, E. Munoz, T. Paulino, Hugo Simão, Ricardo Nunes, Alexandre Bernardino, S. Bermúdez i Badia, Custom-made exergames for older people: New inputs for multidimensional physical training, 5th Experiment International Conference (exp.at'19), 2019
- [39] João Rodrigues, José Cardoso da Silva, Pedro Monteiro, J. Monteiro, R. Lam, Valeria Krzhizhanovskaya, M. H. Lees, Jack Dongarra, P. M. Sloot, Computational Science – ICCS 2019, Proc. of the 19th International Conference on Computational Science in Faro, Portugal, Part V (ICCS 2019), Springer LNCS 11540, 2019
- [40] Pedro Guerreiro, Pedro Cardoso, Hortênsio Fernandes, Applying nsga-ii to a multiple objective dial a ride problem, Computational Science – ICCS 2019, pages 55–69, Cham. Springer International Publishing, 2019
- [41] Keenan Albee, Monica Ekal, Rodrigo Ventura, Richard Linares, Combining parameter identification and trajectory optimization: Real-time planning for information gain, Proc. of Symposium on Advanced Space Technologies in Robotics and Automation (ASTRA 2019), Noordwijk, the Netherlands, ESA-ESTEC, 2019
- [42] Gonçalo Pais, Tiago Dias, Jacinto Nascimento, Pedro Miraldo, OmniDRL: Robust Pedestrian Detection using Deep Reinforcement Learning on Omnidirectional Cameras, Proc. of IEEE International Conference on Robotics and Automation (ICRA), Montreal, Canada, 2019
- [43] Carlos Azevedo, Pedro Lima, A GSPN Software Framework to Model and Analyze Robot Tasks, Proc. of 19th IEEE Int. Conf. on Autonomous Robot Systems and Competitions (ICARSC 2019), 2019
- [44] Emilia Brzozowska, Oscar Lima, Rodrigo Ventura, A generic optimization based cartesian controller for robotic mobile manipulation, Proc. of IEEE International Conference on Robotics and Automation (ICRA), Montreal, Canada, 2019
- [45] João Campos, João Cardoso, Pedro Miraldo, POSEAMM: A Unified Framework for Solving Pose Problems using an Alternating Minimization Method, Proc. of IEEE International Conference on Robotics and Automation (ICRA), Montreal, Canada, 2019
- [46] João Gonçalves, Pedro Lima, Grasp Planning with Incomplete Knowledge About the Object to be Grasped, Proc. of 19th IEEE Int. Conf. on Autonomous Robot Systems and Competitions (ICARSC 2019), 2019
- [47] Min Lee, Alexandre Bernardino, Sergi i Badia, Learning to Assess the Quality of Stroke Rehabilitation Exercises, Proc. International Conference on Intelligent User Interfaces (IUI '19). Marina del Rey, CA, USA, 2019

- [48] Sebastião Miranda, David Nogueira, Afonso Mendes, Andreas Vlachos, Andrew Secker, Rebecca Garret, Jeff Mitchel, Zita Marinho, Automated Fact-Checking in the News Room, The Web Conference, San Francisco, USA, 2019
- [49] Catarina Barata, Jacinto Nascimento, Jorge Salvador Marques, Multiple Agents Representation Using Motion Fields, IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP). Brighton, UK, 2019
- [50] J. Carmona, Rodolfo Abreu, Carlos Santiago, Alberto Leal, Jacinto Nascimento, Patrícia Figueiredo, Classification of sleep stages from fMRI dynamic functional connectivity using deep learning, Proc. of the ISMRM 27th Annual Meeting & Exhibition, Montréal, Quebec, Canada, 2019
- [51] Rodolfo Abreu, Alberto Leal, Patrícia Figueiredo, Classification of BOLD-fMRI dynamic functional connectivity states based on simultaneous EEG microstates, Proc. of the ISMRM 27th Annual Meeting & Exhibition, Montréal, Quebec, Canada, 2019
- [52] Ana Fouto, Joana Pinto, Rita Gouveia Nunes, Luísa Alves, Sofia Calado, Carina Gonçalves, Margarida Rebolo, M. Viana-Baptista, Pedro Vilela, Patrícia Figueiredo, Impact of processing options on histogram metrics extraction from DWI in cerebral small vessel disease, Proc. of the ISMRM 27th Annual Meeting & Exhibition, Montréal, Quebec, Canada, 2019
- [53] Joana Moreira, Joana Pinto, Ana Fouto, Luísa Alves, Sofia Calado, Carina Gonçalves, Margarida Rebolo, Pedro Vilela, M. Viana-Baptista, Patrícia Figueiredo, Amplitude of low-frequency fluctuations in resting-state BOLD-fMRI is associated with cognitive decline in cerebral small vessel disease, Proc. of the ISMRM 27th Annual Meeting & Exhibition, Montréal, Quebec, Canada, 2019
- [54] Joana Pinto, Tânia Charrua, Ana Fouto, Luísa Alves, Sofia Calado, Carina Gonçalves, Margarida Rebolo, M. Viana-Baptista, Pedro Vilela, Rita Gouveia Nunes, Patrícia Figueiredo, Breath-hold BOLD-fMRI cerebrovascular reactivity metrics predict cognitive impairment in cerebral small vessel disease, Proc. of the ISMRM 27th Annual Meeting & Exhibition, Montréal, Quebec, Canada, 2019
- [55] Andreia Freitas, Inês Sousa, Andreia Gaspar, Rui Teixeira, Joseph V. Hajnal, Rita Gouveia Nunes, Improving T2 and B1 parametric estimation in the brain with multi spin-echo MR and fusion bootstrap moves solver (FBMS), Proc. of the ISMRM 27th Annual Meeting & Exhibition, Montréal, Quebec, Canada, 2019
- [56] Andreia Gaspar, Aurelien Bustin, Karl Kunze, Radhouene Neji, Teresa Correia, Nuno Silva, Rita Gouveia Nunes, René M. Botnar, Claudia Prieto, Accelerated Carotid 4D flow MRI with Multicontrast HD-PROST Reconstruction, Proc. of the ISMRM 27th Annual Meeting & Exhibition, Montréal, Quebec, Canada, 2019
- [57] Rui Garcia Figueiredo, Rui Figueiredo, Alexandre Bernardino, José Santos-Victor, Online Recognition-by-Tracking with Deep Appearance and Facial Features in a Robotic Environment, IEEE International Conference on Autonomous Robot Systems and Competitions (ICARSC), Porto, Gondomar, Portugal, 2019
- [58] Daniela Medley, Carlos Santiago, Jacinto Nascimento, Segmenting the left ventricle in cardiac MRI: from handcrafted to deep region based descriptors, IEEE International Symposium on Biomedical Imaging (ISBI). Venice, Italy, 2019
- [59] Catarina Barata, Jorge Salvador Marques, Deep Learning for Skin Cancer Diagnosis with Hierarchical Architectures, IEEE International Symposium on Biomedical Imaging (ISBI). Venice, Italy, 2019
- [60] Rita Cunha, Miguel Malaca, Vasco Sampaio, Bruno Guerreiro, Paraskevi Nousi, Ioannis Mademlis, Anastasios Tefas, Ioannis Pitas, Gimbal Control for Vision-based Target Tracking, Proc. of EUSIPCO. Satellite Workshop on Signal Processing, Computer Vision and Deep Learning for Autonomous Systems, La Coruña, Spain, 2019
- [61] João Pereira, Margarida Silveira, Learning Representations from Healthcare Time Series Data for Unsupervised Anomaly Detection, Proc. of BDSC 2019 - 6th IEEE International Conference on Big Data and Smart Computing, Kyoto, Japan, 2019
- [62] Leandro Dohl, Leandro Cruz, Nuno Barroso Monteiro, Nuno Goncalves, A Content-aware Filtering for RGBD Faces, International Joint Conference on Computer Vision, Imaging and Computer Graphics Theory and Applications (VISIGRAPP). Prague, Czech Republic, 2019
- [63] Ana Rita Oliveira, Patrícia Figueiredo, A. Leal, Rita Gouveia Nunes, Identification of brain connectivity disruptions due to thalamic lesions in early development using Diffusion-Weighted MRI, Proc. of ENBEBG 2019 - IEEE 6th Portuguese Meeting on Bioengineering, Lisbon, Portugal, 2019

- [64] J. Leote, R. Loução, M. Lauterbach, J. Monteiro, Rita Gouveia Nunes, C. Viegas, A. Perez-Hick, A Silvestre, H. A. Ferreira, Understanding network reorganization after glioma regrowth: comparing connectivity measures from functional magnetic resonance imaging to direct cortical stimulation, Proc. of ENBENG 2019 - IEEE 6th Portuguese Meeting on Bioengineering, Lisboa, Portugal, 2019
- [65] André Mateus, O. Tahri, Pedro Miraldo, Active Estimation of 3D Lines in Spherical Coordinates, Proc. of American Control Conference, USA, 2019
- [66] Athira Nambiar, Alexandre Bernardino, A Context-Aware Method for View-Point Invariant Long-Term Re-identification, International Joint Conference on Computer Vision, Imaging and Computer Graphics VISIGRAPP 2017: Computer Vision, Imaging and Computer Graphics – Theory and Applications pp 329-351, 2019

C. Books,

- [1] João Rodrigues, Célia Ramos, Pedro Cardoso, Cláudia Henriques, Handbook of Research on Harnessing the Internet of Everything (IoE) for Accelerated Innovation Opportunities, Hershey, (pp. 1-506), 2019

D. Book Chapters,

- [1] Nelson Pinto, Dario Cruz, Jânio Monteiro, Cristiano Cabrita, Jorge Semião, Pedro Cardoso, Luis Oliveira, João Rodrigues, IoE based Control and Monitoring of Electrical Grids: a Smart Grid's perspective, Chapter 3 of Harnessing the Internet of Everything (IoE) for Accelerated Innovation Opportunities (pp. 57-82), IGI Global, 2019
- [2] Pedro Cardoso, Jânio Monteiro, Nelson Pinto, Dario Cruz, João Rodrigues, Application of Machine Learning Algorithms to the IoE: A Survey, Chapter 2 of Harnessing the Internet of Everything (IoE) for Accelerated Innovation Opportunities (pp. 31-56), IGI Global, 2019
- [3] Maria Fernandes, João Sanches, Raquel Seruca, Targeting the PI3K Signalling as a Therapeutic Strategy in Colorectal Cancer, Targeted Therapy of Colorectal Cancer Subtypes. Advances in Experimental Medicine and Biology. vol 1110. Springer, Cham., 2019

E. PhD Theses

- [1] Joana Pinto, Quantitative evaluation of cerebral haemodynamics using magnetic resonance imaging, Ph.D. Thesis, Instituto Superior Técnico, Universidade de Lisboa, October, 2019, 2019 - **PDF**
- [2] Giovanni Saponaro, Gestures and Object Affordances for Human–Robot Interaction, Ph.D. Thesis, Instituto Superior Técnico, Universidade de Lisboa, September, 2019
- [3] Mehmet Mutlu, Perception, Control and Planning for (Self-)Reconfigurable Modular Robots, Ph.D. Thesis, within the IST-EPFL Joint Doctoral Initiative, August, 2019
- [4] Janir Cruz, EEG signatures of schizophrenia: visual backward masking and microstates, Ph.D. Thesis, within the IST-EPFL Joint Doctoral Initiative, June, 2019
- [5] Pedro Guerreiro, Distributed Algorithms for Collaborative Learning, Ph.D. Thesis, Instituto Superior Técnico, Universidade de Lisboa, February, 2019
- [6] Pedro Lourenço, Globally Convergent Simultaneous Localization and Mapping: Design Techniques, Analysis, and Implementation, Ph.D. Thesis, Instituto Superior Técnico, Universidade de Lisboa, January, 2019