



INSTITUTE FOR SYSTEMS AND ROBOTICS



Annual Report – 2018

Lisbon Pole

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1. EXECUTIVE SUMMARY

During the year of 2018 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.

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2. PUBLICATIONS

A. International Journals,

- [1] Ophélie Favrod, Maya Roinishvili, Janir Cruz, Andreas Brand, Mariam Okruashvili, Tinatin Gamkrelidze, Patrícia Figueiredo, Michael H. Herzog, Eka Chokonia, Albulena Shaqiri, Electrophysiological correlates of visual backward masking in patients with first episode psychosis, *Psychiatry Research: Neuroimaging* Vol. 282 pp 64-72, 2018
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- [9] Nuno Duarte, Mirko Rakovic, Jovica Tasevski, Moreno Coco, Aude Billard, José Santos-Victor, Action Anticipation: Reading the Intentions of Humans and Robots, *IEEE Robotics and Automation Letters (RA-L)* Vol 3, N. 4, 2018
- [10] Eric Price, Guilherme Lawless, Roman Ludwig, Igor Martinovic, Heinrich H Buelthoff, Michael J Black, Aamir Ahmad, Deep Neural Network-based Cooperative Visual Tracking through Multiple Micro Aerial Vehicles, *IEEE Robotics and Automation Letters*, Vol. 3, Issue: 4, pp. 3193-3200, October, 2018
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- [12] Raja Chatila, E. Renaudo, Mihai Andries, Ricardo Chaves-Charcia, Pierre Luce-Vayrac, Raphael Gottstein, Rachid Alami, Aurélie Clodic, Sandra Devin, Benoît Girard, Mehdi Khamassi, Towards Self-Aware Robots, *Frontiers in Robotics and AI* Vol 5, No 88, 2018
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- [18] Simon Hauser, Mehmet Mutlu, P. Banzet, A. Ijspeert, Compliant universal grippers as adaptive feet in legged robots, *Advanced Robotics*, Vol. 32, No. 15, pp. 825-836, 2018
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B. International Conferences,

- [1] Joao Pereira, Margarida Silveira, Unsupervised Anomaly Detection in Energy Time Series Data using Variational Recurrent Autoencoders with Attention, 17th IEEE International Conference on Machine Learning and Applications (ICMLA 2018) Orlando, USA, 2018
- [2] Han Zhao, ShanghangZhang, W. Guanhang, João Paulo Costeira, Jose M. F. Moura, Geoffrey J. Gordon, Adversarial Multiple Source Domain Adaptation, Proc. of 32nd Conference on Neural Information Processing Systems (NeurIPS), Montreal, Canada, 2018
- [3] Joel Reis, Pedro Batista, Paulo Oliveira, Carlos Silvestre, Nonlinear Attitude Observer on SO(3) Based on Single Body-Vector Measurements, Proc. of the 2nd IEEE Conference on Control Technology and Applications, Copenhagen, Denmark, pp. 1319-1324., 2018
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- [5] Ricardo J. M. Veiga, Joao Pereira, João Sardo, Roman Bajireanu, Pedro Cardoso, João Rodrigues, Augmented Reality Indoor Environment Detection: Proof-of-Concept, Proc. of AMACS 2018 - 3rd International Conference on Applied Mathematics and Computer Science, London, UK, 2018
- [6] Roman Bajireanu, Joao Pereira, Ricardo Veiga, João Sardo, Pedro Cardoso, Roberto Lam, João Rodrigues, Mobile Human Shape Superimposition using OpenPose: An Initial Approach, 24th edition of the Portuguese Conference on Pattern Recognition, Coimbra, Portugal, 2018
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- [8] Nuno Barroso Monteiro, João Pedro Barreto, José Gaspar, Surface Cameras from Shearing for Disparity Estimation on a Lightfield, Proc. of Portuguese Conference on Pattern Recognition (RecPad). Coimbra, Portugal, 2018 - PDF
- [9] Simão Marto, Nuno Barroso Monteiro, José Gaspar, Locally Affine Light Fields as Direct Measurements of Depth, Proc. of Portuguese Conference on Pattern Recognition (RecPad). Coimbra, Portugal, 2018 - PDF
- [10] Diogo Portela, Nuno Barroso Monteiro, José Gaspar, Camera Adaptation for Deep Depth from Light Fields, Proc. of Portuguese Conference on Pattern Recognition (RecPad). Coimbra, Portugal, 2018 - PDF
- [11] Maria Henriques, Tiago Pinto, Duarte Dornellas, Jorge GONÇALVES, Ricardo Ribeiro, Alexandre Bernardino, José Santos-Victor, Projeto ELEVAR – Estudo Localizado De Estruturas Verticais Com Aeronaves Robotizadas, IX Conferência Nacional de Cartografia e Geodesia (CNCG). Amadora, Portugal, 2018
- [12] Roman Bajireanu, Joao Pereira, Ricardo J. M. Veiga, J.D.P.Sardo, Pedro Cardoso, Roberto Lam, João Rodrigues, Mobile Human Shape Superimposition: an initial approach using OpenPose, Proc. of AC 2018 - 15th International Conference Applied Computing, Budapest, Hungary, 2018
- [13] Carlos Santiago, Jacinto Nascimento, Jorge S. Marques, Combining an Active Shape and Motion Models for object segmentation in Image Sequences, Proc. of IEEE International Conference on Image Processing (ICIP), 2018
- [14] Catarina Barata, J. M. Lemos, Jorge S. Marques, Estimation of Space-Varying Covariance Matrices, Proc. of IEEE International Conference on Image Processing (ICIP). Athens, Greece, 2018
- [15] João Avelino, F. Correia, J. Catarino, P. Ribeiro, Plinio Moreno, Alexandre Bernardino, A. Paiva, The Power of a Hand-shake in Human-Robot Interactions, Proc. of IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS) Madrid, Spain, 2018
- [16] J. Castanheira, Pedro Vicente, Ruben Martinez-Cantin, Lorenzo Jamone, Alexandre Bernardino, Finding safe 3D robot grasps through efficient haptic exploration with unscented Bayesian optimization and collision penalty, Proc. of IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), Madrid, Spain, 2018
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- [46] ShanghangZhang, X. Shen, Z. Lin, R. Mech, João Paulo Costeira, Jose M. F. Moura, Learning to Understand Image Blur, accepted, CVPR 2018 - IEEE Conference on Computer Vision and Pattern Recognition, Salt Lake City, USA, 2018
- [47] Jayakorn Vongkulbhisal, B. Ugalde, F. De la Torre, João Paulo Costeira, Inverse Composition Discriminative Optimization for Point Cloud Registration, accepted, CVPR 2018 - IEEE Conference on Computer Vision and Pattern Recognition, Salt Lake City, USA, 2018
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- [49] Pedro Miraldo, Francisco Girbal Eiras, S Ramalingam, Analytical Modeling of Vanishing Points and Curves in Catadioptric Cameras, accepted, CVPR 2018 - IEEE Conference on Computer Vision and Pattern Recognition, Salt Lake City, USA, 2018
- [50] S. Tomic, Alicja Wasik, Pedro Lima, A. Martinoli, A. Saffiotti, Institutions for Mixed Human-Robot Societies: a Preliminary Study, accepted, AAMAS 2018 - 17th International Conference on Autonomous Agents and Multiagent Systems, Stockholm, Sweden, 2018

- [51] Mehmet Mutlu, S. Hauser, Alexandre Bernardino, A. Ijspeert, Playdough to Roombots: Towards a Novel Tangible User Interface for Self-reconfigurable Modular Robots, Proc. of ICRA - IEEE International Conference on Robotics and Automation (ICRA), Brisbane, Australia, 2018
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