ANDRE GUSTAVO SCOLARI CONCEICAO

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AREA OF INTEREST:

Robotics systems, autonomous vehicles, computational vision, modeling, and process control.

EDUCATION:

- **B.S. and M.S. degrees** in Electrical Engineering from Pontifical Catholic University of Rio Grande do Sul- PUCRS (Brazil) in 2001 and 2004, respectively.
- **Ph.D. degree** from Oporto University (Portugal) in Electrical and Computer Engineering, in 2007.

ACADEMIC MOBILITY:

- **Visiting Scholar** at School of Electrical Engineering and Computer Science - Queensland University of Technology - QUT (Australia), in 2013. Research project implemented in cooperation with Professor **Peter Corke**.
- **Visiting Scholar** at Department of Electronics, Information, and Bioengineering, Politecnico di Milano - Italy, in 2016. Research project implemented in cooperation with Professor **Andrea Bonarini**.

PROFESSIONAL EXPERIENCE:

- **(2009-current) Associate Professor** - Department of Electrical Engineering, Federal University of Bahia - UFBA. Currently member of the Electrical Engineering Post-graduation Program.
- **(2008-2009) Assistant Professor** - Department of Control Engineering and Automation, Federal University of Ouro Preto - UFOP.

CURRENT PROJECTS:

- **FASTEN - Flexible and Autonomous Manufacturing Systems for Custom-Designed Products:** Develop an integrated and modular framework for efficiently producing custom-designed products. FASTEN is composed by 10 partners, 5 from Europe and 5 from Brazil. Specifically, from Europe the partners are: INESC TEC (the project coordinator), Embraer Portugal S. A, Politecnico Di Milano, PACE Aerospace Engineering and Information Technology and Intellimech; from Brazil the partners are: INESC P&D Brasil (BR project coordinator), PUCRS, Bradel, Embraer and ThyssenKrupp. (Funding from the European Unions Horizon 2020 research and innovation programme).
- **Deep learning neural networks for vision-based systems:** This project aims to develop a visual sensing system for recognition and pose estimation of parts applied to robotic manipulators.
- **Visual Navigation System Applied to Autonomous Mobile Robots:** The objective of this project is to develop a system for extraction and detection of parameters that represent the path to be followed, applying it in the NMPC controllers.

TEACHING:

- Robotic Systems and Mobile Robotics (2008 - 2021), Computer Vision (2016-2021), Introduction to Artificial Intelligence(2012), Logic Systems(2010-2012), Design of Digital Integrated Circuits(2012), Digital Electronics(2010).

ORGANIZATION OF SCIENTIFIC EVENTS:

- **11th IFAC (International Federation of Automatic Control) Symposium on Robot Control - SYROCO (2015). Local Chair.**
- **5th IEEE Biosignals and Biorobotics Conference (BRC 2014) - Local Chair.**

RECENT PUBLICATIONS:

JOURNAL ARTICLES:

- FRANCO, I. J. P. B.; RIBEIRO, T. T.; CONCEIÇÃO, A. G. S.. A NOVEL VISUAL LANE LINE DETECTION SYSTEM FOR A NMPC-BASED PATH FOLLOWING CONTROL SCHEME. JOURNAL OF INTELLIGENT & ROBOTIC SYSTEMS, V. 101, P. 12, 2021.
- PINTO, M. F.; MELO, A. G. ; HONÓRIO, L. M.; MARCATO, A. L. M. ; CONCEIÇÃO, A. G. S.; TIMOTHEO, A. O.. DEEP LEARNING APPLIED TO VEGETATION IDENTIFICATION AND REMOVAL USING MULTIDIMENSIONAL AERIAL DATA. SENSORS, V. 20, P. 6187, 2020
- GUSMEROLI, S. ; DANTAS, M. ; COSTA, F. S. ; HESSEL, F.; Conceição, A. G. S. FASTEN IIOT: AN OPEN REAL-TIME PLATFORM FOR VERTICAL, HORIZONTAL AND END-TO-END INTEGRATION. SENSORS, V. 20, P. 5499, 2020.
- Saback, R.; **Conceição, A. G. S.**; Santos, T.; Albiez, J.; Reis, M. Nonlinear Model Predictive Control Applied to an Autonomous Underwater Vehicle. IEEE JOURNAL OF OCEANIC ENGINEERING, v. 1, p. 1-14, 2019. (DOI: https://doi.org/10.1109/JOE.2019.2919860)
- **Conceição, A. G. S.**; Araujo, H. X.; Santos Jr., J.; SANTOS, T. Remote control of an omnidirectional mobile robot with time-varying delay and noise attenuation. MECHATRONICS, v. 52, p. 7-21, 2018 (DOI: https://doi.org/10.1016/j.mechatronics.2018.04.003)
- Ribeiro, T. T. ; **Conceição, A. G. S.** Nonlinear Model Predictive Visual Path Following Control to Autonomous Mobile Robots. JOURNAL OF INTELLIGENT & ROBOTIC SYSTEMS, v. 1, p. 1-13, 2018. (DOI: https://doi.org/10.1007/s10846-018-0896-3)
- **Conceição, A. G. S.** ; Martinez, L. ; Correia, M. D. . Modeling and friction estimation for wheeled omnidirectional mobile robots**. Robotica (Cambridge. Print)**, p. 1-11, 2015. (DOI: https://doi.org/10.1017/S0263574715000065).
- Nascimento, T. P. ; Costa, L.F. ; **Conceição, A. G. S.** ; Moreira, A. P. Nonlinear Model Predictive Formation Control: An Iterative Weighted Tuning Approach. **Journal of Intelligent & Robotic Systems**, v. 1, p. 1-14, 2015. (DOI: 10.1007/s10846-015-0183-5)
- **Conceição, A. G. S.** ; Nascimento, Tiago P. ; Moreira, A. Paulo . Multi-Robot nonlinear model predictive formation control: the obstacle avoidance problem. **Robotica (Cambridge. Print)**, v. 1, p.1-19,2014.(DOI: https://doi.org/10.1017/S0263574714001696)
- Lima, Pedro U. ; Ahmad, Aamir ; Dias, Andre ; **Conceição, Andre G.S**. ; Moreira, António Paulo ; Silva, Eduardo ; Almeida, Luis ; Oliveira, Luis ; Nascimento, Tiago P. . Formation control driven by cooperative object tracking**. Robotics and Autonomous Systems**, v. 1, p. 68-79, 2014. (DOI: https://doi.org/10.1017/S0263574714001696)
- Nascimento, Tiago P. ; Moreira, António Paulo ; **Conceição, Andre G.S.** . Multi-robot nonlinear model predictive formation control: Moving target and target absence. **Robotics and Autonomous Systems**, v. 61, p. 1502-1515, 2013. (http://dx.doi.org/10.1016/j.robot.2013.07.005)
- **Conceição, A.G.S**., Barreto, J., Dorea, C.E.T., Pieri, E.R., Martinez, L. "Design and Implementation of Model Predictive Control with Friction Compensation on an Omnidirectional Mobile Robot". **IEEE/ASME Transactions on Mechatronics**., 2013. (http://dx.doi.org/10.1109/TMECH.2013.2243161)

CONFERENCE/SYMPOSIUM/WORKSHOP PROCEEDINGS .

- Conceição, A. G. S.; VITURINO, C. C. B. ; PINTO JR, U. M. ; SCHNITMAN, L. Adaptive Artificial Potential Fields with Orientation Control Applied to Robotic Manipulators. IFAC-PAPERSONLINE, v. 53, p. 9924-9929, 2020.
- Lemos, C.; Farias, P. ;Simas, E.; Filho; Conceição, A. G. S. Convolutional Neural Network Based Object Detection for Additive Manufacturing Robotics. In: 19th International Conference on Advanced Robotics (ICAR), 2019.
- Franco, I.; Ribeiro, T. T.; Conceição, A. G. S. A Novel Approach for Parameter Extraction of a NMPC-based Visual Follower Model In: 19th International Conference on Advanced Robotics (ICAR), 2019.
- Arrais, R. ; Veiga, G.; Ribeiro, T. T.; Oliveira, D. ; Fernandes, R. ; Conceição, A. G. S.; Farias, P.. Application of the Open Scalable Production System to Machine Tending of Additive Manufacturing Operations by a Mobile Manipulator. Lecture Notes in Computer Science. 1ed.: Springer International Publishing, 2019, v. , p. 345-356.
- Ribeiro, T. T. ; Fernandez, R. O. ; Conceição, A. G. S. NMPC-based Visual Leader-Follower Formation Control for Wheeled Mobile Robots. In: 2018 IEEE 16th International Conference on Industrial Informatics (INDIN), 2018, p. 406.
- Conceição, A. G. S.; SANTOS, T. L. M. ; Santos Jr., J. . Trajectory Tracking of Omni-Directional Mobile Robots Via Predictive Control Plus a Filtered Smith Predictor. In: 20th IFAC World Congress, 2017, Toulouse. IFAC2017, 2017.
- CESAR, D. B. S. ; REIS, M. ; Conceição, A. G. S. ; JOYEUX, S. ; ALBIEZ, J. . Improvement of Visual Servoing Tasks by Underwater Image Enhancement. In: IEEE/MTS Oceans 2017 Conference, 2017, Anchorage. Aceans2017, 2017.
- BRITTO, J. ; Conceição, A. G. S. ; JOYEUX, S. ; ALBIEZ, J. . Improvements in Dynamics Simulation for Underwater Vehicles deployed in Gazebo. In: IEEE/MTS Oceans 2017 Conference, 2017, Anchorage. Oceans2017, 2017.
- Leite, V.; Conceição, A. Testbed Prototype of an Unmanned Aerial Vehicle Design. In: 2016 XIII Latin American Robotics Symposium (LARS/SBR). p. 340-345.
- Ribeiro, Tiago; Conceição, Andre; Sa, Inkyu; Corke, Peter. Nonlinear Model Predictive Formation Control for Quadcopters. IFAC-PapersOnLine, v. 48, p. 39-44, 2015.
- Pitanga, J.; Araujo, H.;Conceição, A.; Oliveira, G. Stable Model-Based Predictive Control for Wheeled Mobile Robots using Linear Matrix Inequalities. IFAC-PapersOnLine, v. 48, p. 33-38, 2015.
- Stéfano, D.; Martins, P.; Conceição, A.; Costa, A.. Propositional Temporal Logic for planning in an embedded Concurrent Autonomous Agent. In: 2015 IEEE International Conference on Robotics and Automation (ICRA), 2015, v. 1. p. 4813-4818.

Salvador-BA-Brazil, June-2021.

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https://www.youtube.com/channel/UC4K3EHAAxtTfAl5c8fvynDQ