

Alberto Pretto

Curriculum Vitae

Address

Alberto Pretto

IT+Robotics Srl

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Research Interests

Robotics and Computer Vision

Research Positions/Experiences

January 2019-
Current **CEO ad FlexSight Srl.**

October 2018-
Current **R&D Manager at IT+Robotics Srl, spin-of of the university of Padua.**

October 2013 -
September 2018 **Fixed term assistant professor at Department of Computer, Control, and Management Engineering, Sapienza University of Rome.**

February - March
2016 **Visiting researcher at Prof. Cyrill Stachniss' Department of Photogrammetry, University of Bonn, Bonn (Germany).**

- Main research activities: Images pixelwise segmentation with Convolutional Neural Networks.

January 2012 -
September 2013 **Post-doc at Department of Information Engineering (University of Padova).**

- Main research activities: Visual exploration and navigation for mobile robots.

December 2010 -
February 2011,
March 2012 -
May 2012 **Visiting researcher at Prof. Stefano Soatto's UCLA Vision Laboratory, University of California, Los Angeles (USA).**

- Main research activities: Visual inertial navigation, visual exploration for object recognition.

January 2009 -
December 2010 **Post-doc at Department of Information Engineering (University of Padova).**

- Main research activities: Real-time dense Reconstruction of 3D scenes for mobile robots.

February - May
2010 **Visiting researcher at Prof. Stefano Soatto's UCLA Vision Laboratory, University of California, Los Angeles (USA).**

- Main research activities: Vision based navigation and object detection, dense 3D mapping and navigation using omnidirectional vision.

February - April
2008 **Visiting researcher at Prof. Wolfram Burgard's Autonomous Intelligent Systems Laboratory (AIS), University of Freiburg (Germany)..**

- Main research activities: Motion blur invariant visual features and visual odometry.

January
2006–July 2009

Ph.D. student in Information Engineering at Department of Information Engineering (University of Padova).

- Main research activities: Visual Odometry and Vision based Simultaneous Localization and Mapping for Humanoid Robots, Ph.D. Thesis with title: “Visual-SLAM for Humanoid Robots”

November
2003–March
2004

Research fellowship at prof. Enrico Pagello’s Intelligent Autonomous Systems Laboratory (IAS-Lab, University of Padova) .

- Main research activities: Vision based localization for mobile robots.

Awards

Best student paper award finalist (runner up), with paper C. Potena, B. Della Corte, D. Nardi, G. Grisetti and A. Pretto, “Non-Linear Model Predictive Control with Adaptive Time-Mesh Refinement”, at “2018 IEEE International Conference on Simulation, Modeling, and Programming for Autonomous Robots” (SIMPAN), May 16-19, 2018 Brisbane, Australia.

Best student paper award finalist, with paper C. Potena, D. Nardi and A. Pretto, “Fast and Accurate Crop and Weed Identification with Summarized Train Sets for Precision Agriculture”, at “International Conference on Intelligent Autonomous Systems” (IAS), July 3-7, 2016 Shanghai, China.

Best paper award, with paper E. Menegatti, M. Danieletto, M. Mina, A. Pretto, S. Zanconato, P. Zanuttigh, A. Zanella, “Autonomous discovery, localization and recognition of smart objects through WSN and image features”, at “IEEE International Workshop Towards Smart Communications and Network technologies applied on Autonomous Systems”, GLOBECOM 2010, December 6-10, 2010, Florida, USA.

Grants

2016-2018

Coordinator of the FlexSight Project (Flexible and Accurate Recognition and Localization System of Deformable Objects for Pick&Place Robots), *The FlexSight project is funded by the European Community’s FP7/Echord++ programme (total grant 300,000 Euros).*

2015-2018

Co-Principal Investigator of the “Flourish - Aerial Data Collection and Analysis, and Automated Ground Intervention for Precision Farming” European Project, *The Flourish project is funded by the European Community’s Horizon 2020 programme under grant agreement no. 644227-Flourish (total grant 4,780,048 Euros).*

2012-2013

“Giovani Studiosi” grant, *from University of Padova (19,500 Euros). Reserach project title: “TIDY-UP: Enhanced Visual Exploration for Robot Navigation and Object Recognition” (personal research project for the 2-years post-doc fellowship).*

Education

2006–2009

Ph.D. in Information Engineering, *The University of Padova.*

Ph.D. School in Information Engineering - Ph.D. Thesis with title: “Visual-SLAM for Humanoid Robots”

1996–2003

“Laurea” (M.Sc.) in Information Engineering, *The University of Padova.*

Courses and Schools

Courses for Ph.D. Students.

- Applied linear algebra
- Techniques for the Effective Transmission of Multimedia Signals
- Applied functional analysis
- Statistical Methods
- Pattern Recognition and Machine Learning

- 3D Reconstruction from Images
- Software and Algorithms for Scientific Computing

Summer Schools.

- "SLAM Summer School 2006", 27-31 August 2006, University of Oxford, Oxford (UK).
- "Summer School on Perception and Sensor Fusion in Mobile Robotics", 1-7 September 2005, Ancona (Italy).
- "Summer School on Advanced Robotics", ACAI-2003, International University, Bremen (Germany).

Professional Positions

CEO and R&D manager, *FlexSight Srl*.

January
2019-current

Successful projects:

- Design and development of the hardware and software of a Smart RGB-D sensor prototype.
- Design and development of a multi camera rig system for 3D reconstruction of human limbs.

May 2005 -
September 2013
October
2018-current

Charter member and CEO (until October 2008), technical consultant and senior software analyst, *IT+Robotics Srl*.

Successful projects:

- Algorithms for goods localization using motes with radio frequency and ultra-sound communication.
- Hardware/software robotic platform for a mobile sculpture able to autonomously interact and speak with people (video contribution accepted for the Video Proceedings of IEEE ICRA 2007).
- TCP/IP stack and WEB server for an embedded custom-built system based on Atmel ARM7 microcontroller.
- Integrated PTZ/omnidirectional cameras system with advanced targets tracking capabilities.
- Quality control system for glass bottle inspection based on machine vision algorithms and active illumination.
- Custom built industrial electronic boards (x86) with RTLinux based Hard real-time system, graphic user interface, data logging and connectivity functions.
- Technical partner of an European project to develop a framework for teacher education courses in order to enable teachers to implement a robotics-enhanced constructivist learning in school classrooms.
- Custom built mini carrier-board (RS-232, USB Host, Ethernet, WiFi, MicroSD, Quickcapture interfaces) for a credit-card form factor embedded platform based on XScale ARM PXA 270/320 microcontrollers. Development of the Quickcapture interface device driver for a customized Linux system.
- Software classification (Class C software) for embedded systems (Microchip PIC and ARM based platforms) which perform critical functions (EN 298:93, EN 60730, EN 60730-2-9 international standards).
- State-of-the-art vision based bin-picking systems for robotic manipulators.
- cROS [56][29], a lightweight, single thread, full ANSI C ROS (www.ros.org) client library, that enables C programmers to quickly interface with ROS Topics, Services, and Parameters.

March 2004 –
December 2005

Technical consultant, software analyst and developer, *Padova Ricerche/Trastec Scpa*.

Successful projects:

- Computer-aided dredging system: multisensor fusion system (differential GPS, inclinometers, sonars, electronic compass, motor encoders, ...) with 3D mathematical sea bottom reconstruction and directX based 3D GUI.
- Custom built linux-based hard real-time system (x86) for embedded low-cost computer with graphics control tools and connectivity.

- “Software Development Kits” (SDKs) for custom-built electronics boards (CAN bus controllers, motor controls boards, ...).
- Distance learning linux-based system: mpeg4 video multi-streaming (up to 4 high-res sources), mp3 audio multi-streaming (up to 10 sources), multicast channel, remote desktop, real-time remote direction.

Research Activities

- Mobile robot localization based on Omnidirectional vision and Monte-Carlo algorithms [48],[50], [8]
- Programming of vision based interactive autonomous robots [47], [45]
- Topological SLAM (Simultaneous Localization and Mapping) with Wavelet Transform based images similarity [7], [46]
- Visual odometry based on visual features robust to motion blur [42], [43]
- Visual-inertial navigation [32]
- Intelligent vision sensors with thermal cameras [38], [41] e telecamere omnidirezionali [39]
- Outdoor Visual SLAM and 3D reconstruction [36], [33]
- Robot localization and mapping based on “smart objects” and wireless sensors networks [6], [34], [40]
- Object detection and localization for industrial applications [9], [25], [55] e RGB-D [30]
- Sensor calibration systems: RGB-D cameras [4], [28] and Inertial Measurement Unit (IMU) [27], [26], [54]
- Image classification and segmentation based on CNN (Convolutional Neural Network) for autonomous agricultural robots [22], [23]
- Control and navigation of autonomous drones (UAV) based on vision and NMPC (Nonlinear Model Predictive Control) controllers [19], [21]

Teaching Activities

Sapienza University of Rome.

- 2016-2018 Lecturer in “Seminars in Artificial Intelligence and Robotics” course. **Topics:** Computer vision for robotics: low-level vision, 3D reconstruction from images, vision based ego-motion estimation, visual servoing, object detection and localization, and semantic scene segmentation, 24 hours.
- 2016-2018 Lecturer in “Programming Techniques course”. **Topics:** The C language, cost of programs, abstract data types: List, Stack, queues, binary trees, ..., course of 48 hours.
- 2014-2016 Lecturer in “Computer Programming” course. **Topics:** review of C programming, the C++ language: object oriented programming, data encapsulation, design by abstract types, templates, ..., 48 hours.
- 2013-2014 Lecturer in “Computer Networks and Operating Systems” course. **Topics:** Structure of modern operating systems, major components of an operating system (memory management, virtual memory, multitasking, I/O, device drivers, ..), concurrency and multi threading, 48 hours.

University of Padova.

- 2019-2020 Lecturer in ““Computer Vision” course. **Topics:** Camera Calibration, colorimetry, basic image processing operators, visual features detection and description, object detection and pose estimation, optical flow. 32 hours.
- 2019-2020 Teacher assistant in Autonomous Robotics course. **Topics:** Probabilistic Robotics (Introduction to probabilistic robotics: Bayes filters, discrete filters, particle filters, Kalman filter, sensor and motion models, Robot Localization and Mapping. Introduction to 3D vision. 12 hours.
- 2018-2019 Teacher assistant in Autonomous Robotics course. **Topics:** Probabilistic Robotics (Bayes filters, discrete filters, particle filters, Kalman filter, sensor and motion models, Robot Localization and Mapping, 8 hours.

- 2013-2014 Lecturer in Programming Languages for Industrial Systems course. **Topics:** Introduction to computer architectures and operative systems, the MIPS assembly language, the C language, profiling and debugging, the user interfaces, course of 24 hours.
- 2012-2013 Lecturer in Programming Languages for Industrial Systems course. **Topics:** Introduction to computer architectures and operative systems, the MIPS assembly language, the C language, profiling and debugging, the user interfaces, course of 24 hours.
- 2012-2013 Teacher assistant in Autonomous Robotics course (prof. Pagello). **Topics:** Probabilistic Robotics (Bayes filters, discrete filters, particle filters, Kalman filter, sensor and motion models, Robot Localization and Mapping, 10 hours.
- 2011-2012 Lecturer in Programming Languages for Industrial Systems course. **Topics:** Introduction to computer architectures and operative systems, the MIPS assembly language, the C language, profiling and debugging, the user interfaces, course of 26 hours.
- 2010-2011 Lecturer in Programming Languages for Industrial Systems course. **Topics:** Introduction to computer architectures and operative systems, the MIPS assembly language, the C language, profiling and debugging, the user interfaces, course of 54 hours.
- 2010-2011 Teacher assistant in Autonomous Robotics course (prof. Pagello). **Topics:** Probabilistic Robotics (Bayes filters, discrete filters, particle filters, sensor and motion models, Robot Localization with omnidirectional vision and range finder sensors), 8 hours.
- 2010-2011 Teacher assistant in Information Systems course (prof. Pagello). **Topics:** Introduction to Operating Systems, 4 hours.
- 2009-2010 Teacher assistant in Autonomous Robotics course (prof. Menegatti). **Topics:** Probabilistic Robotics (Bayes filters, Kalman filter, discrete filters, particle filters, sensor and motion models, Robot Localization with omnidirectional vision and range finder sensors), 10 hours.
- 2009-2010 Teacher assistant in Industrial Automation course (prof. Oboe). **Topics:** Computer organization and architecture: number systems, digital logic, the computer system (CPU, ALU, memory, I/O devices, ...), programming in assembly language, 16 hours.
- 2008-2009 Teacher assistant in Programming Embedded Systems course (prof. Reggiani). **Topics:** Introduction to the Linux operating system; Programming in C (The C Compiler, the C Preprocessor, the Make program builder, variables, structures, array, expressions and operators, control statements, pointers in C, input and output), 20 hours.
- 2008-2009 Teacher assistant in Autonomous Robotics course (prof. Menegatti). **Topics:** Probabilistic Robotics (Bayes filters, Kalman filter, particle filters, sensor and motion models, Robot Localization with vision and range finder sensors), 14 hours.
- 2007-2008 Teacher assistant in Robotics course (prof. Menegatti). **Topics:** Probabilistic Robotics (Bayes filters, Kalman filter, particle filters, sensor and motion models, Robot Localization), 10 hours.
- 2006-2007 Teacher assistant in Information Systems course (prof. Pagello). **Topics:** The Relational Model, use of a Database Management Systems, 4 hours.
- 2006-2007 Teacher assistant in Robotics course (prof. Menegatti). **Topics:** Probabilistic Robotics (Bayes filters, Kalman filter, sensor and motion models), 6 hours.
- 2006-2007 Laboratory tutor in Robotics course (prof. Menegatti). **Topics:** Fourier Signature Sensor Model, Extended Kalman Filter Mobile Robot Localization, 12 hours.

Professional Activities

Associate Editor.

- "IEEE International Conference on Robotics and Automation (ICRA)", 2020
- "IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)", 2015, 2016, 2017

Program Committee Member.

- "International Conference on Intelligent Autonomous Systems (IAS)" - 2014, 2020

- “International Joint Conference on Artificial Intelligence (IJCAI)” - 2015, 2017, 2018, 2019
- “European Conference on Mobile Robots (ECMR)” - 2013,2015,2017,2019
- “IEEE International Symposium on Robot and Human Interactive Communication (IEEE RO-MAN)” - 2014
- “Robotics: Science and Systems Conference (RSS) - 2011
- “IEEE ICRA Workshop on Omnidirectional Robot Vision” - 2010
- “Workshop on Teaching with robotics: didactic approaches and experiences” - 2008
- “AAMAS Workshop on Formal Models and Methods for Multi-Robot Systems” - 2008

Invited speaker.

- “Industrial Forum: From Autonomous Systems to Intelligent Manufacturing for Industrie 4.0”, July 7, 2016, National Exhibition and Convention Center, Shanghai, China

Other activities.

- Publicity Chair at “International Conference on Intelligent Autonomous Systems (IAS)” - 2014

Journals Reviewer.

- IEEE Transactions on Robotics - 2009, 2016, 2018
- IEEE Robotics & Automation Letters - 2017, 2018, 2019, 2020
- Robotics and Autonomous Systems Journal (RAS) - 2009, 2014, 2015, 2017
- Computer Vision and Image Understanding - 2014
- Advanced Robotics (journal) - 2012
- Sensors (journal) - 2011
- IEEE Robotics & Automation Magazine - 2010

Conferences Reviewer.

- IEEE International Conference on Robotics and Automation (ICRA) - 2007, 2009, 2012, 2013, 2014, 2015, 2016, 2017, 2019
- IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS) - 2006, 2010, 2011, 2012, 2013, 2014, 2018, 2019, 2020
- IFAC World Congress - 2020
- International Conference on Unmanned Aerial Vehicles in Geomatics (UAV-g) - 2017
- International Joint Conference on Artificial Intelligence (IJCAI) - 2016
- AAAI Conference on Artificial Intelligence - 2012, 2014
- IEEE-RAS International Conference on Humanoid Robots - 2013
- International Conference on Intelligent Autonomous Systems (IAS) - 2012
- European Conference on Mobile Robots (ECMR) - 2011
- European Signal Processing Conference (EUSIPCO) - 2011
- Robocup International Symposium - 2011
- IEEE ICRA10 Workshop on Omnidirectional Robot Vision - 2010
- International Conference on Simulation, Modeling and Programming for Autonomous Robots (SIMPAN) - 2010
- Workshop on Humanoid Soccer Robots - IEEE Humanoids conference - 2010
- International Symposium on Mechatronics and its Applications (ISMA) - 2009
- Workshop on "Teaching with robotics" - SIMPAR Conference - 2008
- Distributed Autonomous Robotic Systems (DARS) - 2006
- IEEE International Conference on Robotics and Biomimetics (ROBIO) - 2006

Publications

Journal Papers

- [1] A. Pretto, S. Aravecchia, W. Burgard, N. Chebrolu, C. Dornhege, T. Falck, F. Fleckenstein, A. Fontenla, M. Imperoli, R. Khanna, F. Liebisch, P. Lottes, A. Milioto, D. Nardi, S. Nardi, J. Pfeifer, M. Popović, C. Potena, C. Pradalier, E. Rothacker-Feder, I. Sa, A. Schaefer, R. Siegwart, C. Stachniss, A. Walter, W. Winterhalter, X. Wu and J. Nieto. **Building an Aerial-Ground Robotics System for Precision Farming: An Adaptable Solution**, In IEEE Robotics & Automation Magazine, 2020 (*In press*), DOI: 10.1109/MRA.2020.3012492
- [2] M. Fawakherji, A. Youssef, D. D. Bloisi, A. Pretto, and D. Nardi **Crop and Weed Classification Using Pixel-wise Segmentation on Ground and Aerial Images**, In: International Journal of Robotic Computing, Vol: 2, Issue: 1, April 2020, pages 39-57, DOI: 10.35708/RC1869-126258
- [3] C. Potena, R. Khanna, J. Nieto, R. Siegwart, D. Nardi, and A. Pretto. **AgriColMap: Aerial-Ground Collaborative 3D Mapping for Precision Farming**, In: IEEE Robotics and Automation Letters, Vol: 4, Issue: 2, April 2019, pages 1085-1092, DOI: 10.1109/LRA.2019.2894468
- [4] F. Basso, E. Menegatti, and A. Pretto. **Robust Intrinsic and Extrinsic Calibration of a Camera-Depth Sensor Couple**, In: IEEE Transactions on Robotics, Vol: 34, Issue: 5, Oct. 2018, pages 1315-1332, ISSN: 1552-3098, DOI: 10.1109/TRO.2018.2853742
- [5] M. Imperoli, C. Potena, D. Nardi, G. Grisetti and A. Pretto. **An Effective Multi-Cue Positioning System for Agricultural Robotics**, In: IEEE Robotics and Automation Letters, Vol: 3, Issue: 4, October 2018, pages 3685-3692, ISSN 2377-3766, DOI: 10.1109/LRA.2018.2855052
- [6] A. Bardella, M. Danieletto, E. Menegatti, A. Zanella, A. Pretto and P. Zanuttigh, **Autonomous robot exploration in smart environments exploiting wireless sensors and visual features** In: Annals of Telecommunications, August 2012, Volume 67, Issue 7-8, pp 297-311, ISSN: 0003-4347, DOI: 10.1007/s12243-012-0305-z
- [7] A. Pretto, E. Menegatti, Y. Jitsukawa, R. Ueda, T. Arai, **Image similarity based on Discrete Wavelet Transform for robots with low-computational resources**, In: Robotics and Autonomous Systems, Elsevier Vol: 58, Issue: 7, July 2010, Pages 879-888, ISSN: 0921-8890, DOI: 10.1016/j.robot.2010.03.009
- [8] E. Menegatti, A. Pretto, A. Scarpa, E. Pagello **Omnidirectional vision scan matching for robot localization in dynamic environments**, In: IEEE Transactions on Robotics Vol: 22, Iss: 3, June 2006, pages 523- 535, ISSN: 1552-3098, DOI: 10.1109/TRO.2006.875495

Submitted or in Revision

- [9] M. Imperoli and A. Pretto. **Active Detection and Localization of Textureless Objects in Cluttered Environments**, In arXiv preprint arXiv:1701.05748, 2017

Conference Papers

- [10] M. Fawakherji, C. Potena, I. Prevedello, A. Pretto, D. D. Bloisi, and D. Nardi **Data Augmentation Using GANs for Crop/Weed Segmentation in Precision Farming**, In: Proceedings of the IEEE Conference on Control Technology and Applications (CCTA), 2020
- [11] D. Evangelista, M. Antonelli, A. Pretto, C. Eitzinger, M. Moro, C. Ferrari, and E. Menegatti **SPIRIT - A Software Framework for the Efficient Setup of Industrial Inspection Robots**, In: Proceedings of the IEEE International Workshop on Metrology for Industry 4.0 and IoT, 2020, DOI: 10.1109/MetroInd4.0IoT48571.2020.9138179

- [12] C. Potena, D. Nardi, and A. Pretto **Joint Vision-Based Navigation, Control and Obstacle Avoidance for UAVs in Dynamic Environments**, In: Proceedings of the European Conference on Mobile Robots (ECMR), Sept. 4-6 2019, Prague, Czech Republic, DOI: 10.1109/ECMR.2019.8870944
- [13] M. Fawakherji, C. Potena, D. D. Bloisi, M. Imperoli, A. Pretto and D. Nardi **UAV Image Based Crop and Weed Distribution Estimation on Embedded GPU Boards**, In: Proceedings of the Workshop on Deep-learning Based Computer Vision for UAV (in conjunction with the 18th International Conference on Computer Analysis of Images and Patterns), 2019, DOI: 10.1007/978-3-030-29930-9_10
- [14] D. Evangelista, M. Imperoli, and A. Pretto **FlexSight - A Flexible and Accurate System for Object Detection and Localization for Industrial Robots**, In: Proceedings of the IEEE International Workshop on Metrology for Industry 4.0 and IoT, 2019, DOI: 10.1109/METROI4.2019.8792902
- [15] D. Evangelista, M. Imperoli, E. Menegatti, and A. Pretto **Machine Vision for Embedded Devices: from Synthetic Object Detection to Pyramidal Stereo Matching**, In: Proceedings of the Austrian Robotics and OAGM Workshop, 2019, DOI: 10.3217/978-3-85125-663-5-08
- [16] M. Fawakherji, A. Youssef, D. D. Bloisi, A. Pretto, and D. Nardi. **Crop and Weeds Classification for Precision Agriculture using Context-Independent Pixel-Wise Segmentation**, In: Proceedings of the IEEE International Conference on Robotic Computing (IRC), 2019, DOI: 10.1109/IRC.2019.00029
- [17] C. Potena, R. Khanna, J. Nieto, D. Nardi, and A. Pretto. **Collaborative UAV-UGV Environment Reconstruction in Precision Agriculture**, In: Proceedings of the IEEE/RSJ IROS Workshop "Vision-based Drones: What's Next?", 2018
- [18] L. Monorchio, D. Evangelista, N. Imperoli, and A. Pretto. **Learning from Successes and Failures to Grasp Objects with a Vacuum Gripper**, In: Proceedings of the IEEE/RSJ IROS Workshop "Task-Informed Grasping for rigid and deformable object manipulation", 2018
- [19] C. Potena, B. Della Corte, D. Nardi, G. Grisetti and A. Pretto. **Non-Linear Model Predictive Control with Adaptive Time-Mesh Refinement**, In: Proceedings of the IEEE International Conference on Simulation, Modeling, and Programming for Autonomous Robots (SIMPAN), May 16-19, 2018 Brisbane, Australia, DOI: 10.1109/SIMPAN.2018.8376274 - (*Best Student Paper Award - Runner up*)
- [20] D. Evangelista, W. U. Villa, M. Imperoli, A. Vanzo, L. Iocchi, D. Nardi and A. Pretto. **Grounding Natural Language Instructions in Industrial Robotics**, In: Proceedings of the IEEE/RSJ IROS Workshop "Human-Robot Interaction in Collaborative Manufacturing Environments (HRI-CME)", 2017
- [21] C. Potena, D. Nardi and A. Pretto. **Effective Target Aware Visual Navigation for UAVs**, In: Proceedings of the European Conference on Mobile Robots (ECMR), Sept. 6-8 2017 Paris, France, DOI: 10.1109/ECMR.2017.8098714
- [22] M. Di Cicco, C. Potena, G. Grisetti and A. Pretto. **Automatic Model Based Dataset Generation for Fast and Accurate Crop and Weeds Detection**, In: Proceedings of the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), Sept. 24-28 2017, Vancouver, BC, Canada, DOI: 10.1109/IROS.2017.8206408

- [23] C. Potena, D. Nardi and A. Pretto. **Fast and Accurate Crop and Weed Identification with Summarized Train Sets for Precision Agriculture**, In: Proceedings of the 14th International Conference on Intelligent Autonomous Systems (IAS-14), July 3-7, 2016 Shanghai, China, DOI: 10.1007/978-3-319-48036-7_9 - (*Best Student Paper Award - Finalist*)
- [24] C. Potena, A. Pretto, D. D. Bloisi and D. Nardi **Plane Extraction For Indoor Scene Recognition**, In Proceedings of Advanced Concepts for Intelligent Vision Systems, Oct. 26-29, 2015, Catania, Italy, pages: 530-540, DOI: 10.1007/978-3-319-25903-1_46
- [25] M. Imperoli and A. Pretto. **D²CO: Fast and Robust Registration of 3D Textureless Objects using the Directional Chamfer Distance**, In: Proceedings of the 10th International Conference on Computer Vision Systems, July 6-9, 2015 Copenhagen, Denmark, pages: 316 - 328, DOI: 10.1007/978-3-319-20904-3_29
- [26] A. Pretto and G. Grisetti. **Calibration and performance evaluation of low-cost IMUs**, In Proceedings of the 20th IMEKO TC4 International Symposium, Sep. 15 - 17, 2014 Benevento, Italy, pages: 429 - 434, ISBN-14: 978-92-990073-2-7
- [27] D. Tedaldi, A. Pretto and E. Menegatti. **A Robust and Easy to Implement Method for IMU Calibration without External Equipments**. In: Proceedings of the IEEE International Conference on Robotics and Automation (ICRA 2014), May 31 - June 7, 2014 Hong Kong, China, Page(s): 3042 - 3049, DOI: 10.1109/ICRA.2014.6907297
- [28] F. Basso, A. Pretto and E. Menegatti. **Unsupervised Intrinsic and Extrinsic Calibration of a Camera-Depth Sensor Couple**. In: Proceedings of the IEEE International Conference on Robotics and Automation (ICRA 2014), May 31 - June 7, 2014 Hong Kong, China, Page(s): 6244 - 6249, DOI: 10.1109/ICRA.2014.6907780
- [29] N. Boscolo, F. Pretto, A. Pretto and S. Colombo. **cROS: a ROS interface for motion controllers** In: Workshop Proceedings of 13th International Conference on Intelligent Autonomous Systems (IAS-13), Padova, Italy
- [30] M. Antonello, A. Pretto and E. Menegatti. **Fast Incremental Objects Identification and Localization using Cross-correlation on a 6 DoF Voting Scheme** In: Proc. of International Joint Conference on Computer Vision, Imaging and Computer Graphics Theory and Applications (VISIGRAPP 2014), pages: 499-5040
- [31] A. Pretto, S. Tonello, E. Menegatti **Flexible 3D Localization of Planar Objects for Industrial Bin-Picking with Monocamera Vision System** Proc. of the IEEE International Conference on Automation Science and Engineering (IEEE CASE 2013), Madison, Wisconsin, (USA), August 17-21, 2013, Pages: 168 - 175, DOI: 10.1109/CoASE.2013.6654067
- [32] K. Tsotsos, A. Pretto, S. Soatto **Visual-Inertial Ego-Motion Estimation for Humanoid Platforms** Proc. of the IEEE-RAS International Conference on Humanoid Robots (Humanoids 2012), Osaka (Japan), Pages: 704 - 711, ISBN: 978-1-4673-1369-8, DOI: 10.1109/HUMANOIDS.2012.6651597
- [33] A. Pretto, E. Menegatti and E. Pagello **Omnidirectional Dense Large-Scale Mapping and Navigation Based on Meaningful Triangulation** In: Proceedings of the IEEE International Conference on Robotics and Automation (ICRA 2011), May 9-13, 2011 Shanghai (China), Pages: 3289 - 3296, ISBN: 978-1-61284-386-5, DOI: 10.1109/ICRA.2011.5980206

- [34] E. Menegatti, M. Danieleto, M. Mina, A. Pretto, S. Zanconato, P. Zanuttigh, A. Zanella **Autonomous discovery, localization and recognition of smart objects through WSN and image features** In: IEEE International Workshop Towards Smart Communications and Network technologies applied on Autonomous Systems (SaCoNAS), IEEE GLOBECOM 2010, Pages: 1653 - 1657, ISBN: 978-1-4244-8863-6, DOI: 10.1109/GLOCOMW.2010.5700221 - (*Best Paper Award*).
- [35] J. Meltzer, A. Pretto, B. Taylor and S. Soatto **Closing the Recognition Loop: Recognizing and Searching for Objects in the Real World** In: Towards Closing the Loop: Active Learning for Robotics - Workshop at Robotics: Science and Systems Conference 2010 (poster)
- [36] A. Pretto and E. Menegatti **Omnidirectional Dense Structure Reconstruction Based on Meaningful Reconstruction** In: OMNIVIS 2010: The 10th Workshop on Omnidirectional Vision, Camera Networks and Non-classical Cameras - Robotics: Science and Systems Conference 2010 (poster)
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