Dr. Javier Alonso-Mora, Associate professor

Contact Information

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Research Interests

Motion planning, coordination, learning and control for multi-robot systems and mobile robots that navigate in environments shared with other robots and humans. Multi-robot fleet design, coordination and control for shared Automated Mobility-on-Demand.

Education

Ph.D. Robotics, "Collaborative Motion Planning for Multi-Agent Systems" **10/2010 - 03/2014**
ETH Zurich, Zurich, Switzerland, Prof. R. Siegwart
Thesis committee: Prof. R. Siegwart, Dr. P. Beardsley, Prof. R. D'Andrea, Prof. D. Rus

M.Sc. Robotics, Systems & Control **09/2008 - 05/2010**
ETH Zurich, Zurich, Switzerland GPA: 5.92 (max. 6), Rank: 1 (ETHZ Willi-Studer Prize)

M.Sc. Industrial Engineering - Ingeniería Industrial **09/2003 - 06/2010**
Universitat Politècnica de Catalunya, Barcelona, Spain GPA: 9.2 (max. 10), Rank: 1

B.Sc. Mathematics - Licenciatura en Matemáticas **09/2003 - 06/2008**
Universitat Politècnica de Catalunya, Barcelona, Spain GPA: 9.2 (max. 10), Rank: 2

Experience

Delft University of Technology, Delft, Netherlands
Associate Professor, Department of Cognitive Robotics **08/2020 - present**
Assistant Professor, Department of Cognitive Robotics **07/2017 - 07/2020**
Assistant Professor, Delft Center for Systems and Control **10/2016 - 06/2017**

- I lead the Autonomous Multi-Robots lab, which is composed of several doctoral and postdoctoral researchers. I have acquired funding from both industry and research foundations, including a Netherlands Organization for Scientific Research (NWO) Veni award in its prestigious personal talent scheme.

Amsterdam Institute for Advanced Metropolitan Solutions, Amsterdam, Netherlands
Principal Investigator **01/2019 - present**

- We tackle todays urban sustainability challenges with a focus on robotics and transportation.

Routable AI, Boston, MA, USA
Co-founder, board member and scientific advisor **10/2018 - present**

- Routable AI offers a turnkey fleet management solution for fleets of on-demand shared cars, shuttles and buses. The company builds on top of my past ridesharing research.

Massachusetts Institute of Technology, Computer Science and Artificial Intelligence Lab CSAIL, Distributed Robotics Lab - Prof. D. Rus, Cambridge, USA
Postdoctoral Associate **08/2014 - 09/2016**

- Developed constrained optimization algorithms for multi-robot navigation, motion planning, multi-robot collaborative manipulation, reactive mission planning with formal methods and on-demand transportation including ride sharing.
- Led the planning & control part for the Toyota-CSAiL research effort on self-driving cars.
- Collaborated with the Singapore-MIT alliance for technology, Cornell University and across MIT.
- Co-wrote a grant proposal for autonomous driving in cluttered environments.

Visiting Researcher **02/2013 - 06/2013**

- Developed a method for collaborative manipulation of deformable objects by a team of mobile manipulators, within the larger goal of factory automation and funded by The Boeing Company.

Disney Research Zurich, Computer Vision Lab - Dr. P. Beardsley, Zurich, Switzerland

Consultant **09/2015 - 09/2017**

Postdoctoral Researcher - joint with ETH Zurich **03/2014 - 07/2014**

Doctoral Researcher - joint with ETH Zurich **09/2010 - 02/2014**

Summer intern **06/2009 - 08/2009 & 06/2010 - 08/2010**

- Executed several successful technology transfers and collaborations with Imagineering R&D, The Walt Disney Company, USA.
- Led the design of a code library to control the motion of large teams of robots.
- Created a novel interactive display formed by hundreds of mobile robots.
- Developed prototypes for semi-autonomous driving and mobile robots on land, water and air.

ETH Zurich, Autonomous Systems Lab - Prof. R. Siegwart, Zurich, Switzerland

Postdoctoral Researcher **03/2014 - 07/2014**

Research Assistant **09/2010 - 02/2014**

- Developed algorithms for multi-robot control, motion planning in dynamic environments and human-swarm interaction.
- Performed experiments with quadrotor UAVs, wheelchairs and edutainment robots.
- Supervised student projects and helped with teaching.

EPF Lausanne, Chair of International Finance, Lausanne, Switzerland

Research Intern **06/2008 - 07/2008**

- Studied optimization models for optimal fiscal policy in small countries, such as Switzerland.

Institut de Robòtica i Informàtica Industrial, Barcelona, Spain

Part-time Research Intern **09/2006 - 12/2007**

- Developed a numerical model (thermo and fluid dynamics) of a PEM fuel cell.

Teaching Experience

Qualifications

University Teaching Qualification (Basiskwalificatie Onderwijs), TU Delft 02/2019

Lectures

- RO4705 Planning and Decision Making, TU Delft, Delft, Netherlands
Responsible lecturer, I am designing a new course for the M.Sc. Robotics, 5 EC. 2020-present
- SC42090/ME47035 Robot Motion Planning and Control, TU Delft, Delft, Netherlands
Responsible lecturer, I designed and teach the course, 4 EC, 150 students. 2018-present
- ME41025 Robotics Practicals, TU Delft, Delft, Netherlands
Two lectures and two practicals given by my PhD student B. Brito. 2018-present
- SC42035 Integration Project Systems & Control, TU Delft, Delft, Netherlands
Part of the exam committee. 2017
- IN4010(-12) Artificial Intelligence Techniques, TU Delft, Delft, Netherlands
One lecture "Motion planning" and exam questions, 100 students. 28/11/2017
- ME41105 Intelligent Vehicles, TU Delft, Delft, Netherlands
One lecture "Motion planning for Autonomous Vehicles", 50 students. 22/10/2016 & 04/12/2017
- MIT 2.166 Autonomous Vehicles (Duckietown), MIT, Cambridge, USA
Part of the lecturer and design team, `https://duckietown.mit.edu/`, 30 students. 2016
- Robotic manipulation, Cornell University, Ithaca, USA
One lecture "Collision avoidance for cooperative robots", 10 students. 05/11/2014
- Introduction to mobile robots, ETH Zurich, Zurich, Switzerland.
Supervision of exercise lectures, about thirty students. 02/2011 - 05/2011

Student projects

- Supervisor of more than forty B.Sc. and M.Sc. final projects.

Honors and Awards

Personal

- IEEE ICRA Best Paper Award on Multi-Robot Systems, 2019.
- Amazon Research Awards, 2019.

- Winner Taxify Self-driving Fleet Optimisation Challenge, 2018.
- NWO Veni award, Talent Scheme, The Netherlands Organisation for Scientific Research, 2017. (Most prestigious grant and award in the Netherlands for young researchers, 12% success rate)
- Best video award (2nd price), IEEE Conference in Human Robot Interaction (HRI), 2014.
- Best student paper nomination, Int. Symp. on Distributed Autonomous Robotic Systems, 2010.
- Willi-Studer Prize for highest GPA in M.Sc. RSC, ETH Zurich, 2010.
- Winning team of the Nanogram cup at the Robocup, Graz, 2009.
- Bronze medal in the VIII Ibero-American Mathematics Olympiad for university students, 2005.
- Silver medal in the XXXIX Spanish Mathematics Olympiad for high-school students. 2003.
- Silver medal in the XIV Spanish Physics Olympiad for high-school students. 2003.
- Several prices in various Mathematics competitions for high-school students, 2000-2003.

By supervised researchers

- Aspasia grant, L. Ferranti, 2018.
- ETH Spark award finalist, T. Naegeli, 2017.
- Qualcomm scholarship, T. Naegeli, 2014.
- Siemens prize to best Bachelor Fokus Project at ETH, Skye team, 2012.

Supervision

Postdoctoral researchers

- B. Alves Beirigo (Joint with B. Atasoy)	12/2020 - present
- J. Narayan (Joint with A. Kana and B. Atasoy)	12/2020 - present
- X. Wang (Joint with M. Wang)	10/2020 - present
- A. Fielbaum	11/2019 - present
- X. Bai	08/2019 - 07/2020
- J. Luo (Joint with E. Steur and J. Padding)	11/2018 - 10/2019
- L. Ferranti (Joint with R. Happee and D. Gavrila)	05/2018 - 10/2019
———— (Joint with R. Negenborn and T. Kevizcky)	04/2017 - 04/2018
- M. Cap, AMS fellow	10/2017 - 12/2018

PhD candidates

- L. Knoedler, main supervisor / co-promotor (TUD)	02/2021 - present
- D. Benders, co-promotor (TUD), PI: L. Ferranti	01/2021 - present
- M. Lodel, main supervisor / co-promotor (TUD)	10/2020 - present
- E. Trevisan, main supervisor / co-promotor (TUD)	10/2020 - present
- O. de Groot, main supervisor / co-promotor (TUD)	03/2020 - present
- M. Spahn, main supervisor / co-promotor (TUD)	01/2020 - present
- M. Kroenmuller, main supervisor / co-promotor (TUD)	09/2019 - present
- A. Serra Gomez, main supervisor / co-promotor (TUD)	07/2019 - present
- D. Jarne Ornia, co-promotor, PI: M. Mazo (TUD)	09/2018 - present
- B. Brito, main supervisor / co-promotor (TUD)	01/2018 - present
- H. Zhu, main supervisor / co-promotor (TUD)	10/2017 - present
- W. Schwarting, supervisor while at MIT & collaborator, PI: D. Rus (MIT)	09/2016 - 12/2020
- A. Wallar, supervisor while at MIT & collaborator, PI: D. Rus (MIT)	09/2015 - 05/2019
- T. Naegeli, co-advisor, PI: O. Hilliges (ETHZ)	09/2014 - 09/2018

M.Sc. students

TUD: J. Snijders (-), J. Buwalda (-), B. Surewaard (-), C. Salmi (-), A. Agarwal (-), P. Schuller (-), F. Claramunt (-), W. van Unen (Xomnia, -), J. Govers (2020), B. van den Berg (2020), E. Croll (2020), S. Gupta (2020), J. Lin (2019), A. de Ruijter (CiTG, 2019 - cum laude), B. van Hofslot (IHMC, 2019), M. vam Weperen (2019), R. de Jonge (Mainblades, 2019), Y. Katsaounis (2019), J. van Lochem (ORTEC, 2019), A. Krishnakumar (RCS, 2019), B. Floor (2018), R. Durrant (2018), W. Vaandrager (Transdev, 2018), D. Adrichem (Waternet, 2018), D. Bellan (2018), M. van der Zee (SMART, 2018 - cum laude), R. Willems (Aachen, 2018), N. Potdar (2018 - cum laude), F. Marquez (2018), A. Pallini (Mainblades, 2018), R. Cumbal (2017), J. Juhl (2017), B. Zhou (2017), A. Seewer (2017). MIT: S. Baker (2015). ETHZ: P. Andermatt (2019), M. Katancevic (2014), D. Jud (2014), T. Gubler (2013), M. Zellweger (2013), R. Grieder (2012), P. Gohl (2012), M. Schoch (2012), S. Hauri (2011), S. Haag (2011).

Research interns

TUD: R. Ruigrok (2018-2019). DRZ: M. Katancevic (2013), T. Naegeli (2012), R. Grieder (2012), M. Eriksson (2012), P. Gohl (2013), S. Hauri (2011), K. Tran (2011).

B.Sc. students

TUD: 4 x Bachelor End Project (TUD), 2017-present. 2 x visitors from CFIS-UPC. MIT: 1 x B.Sc. thesis (2016). ETHZ: 8 x B.Sc. thesis, 2011-2014. Fokusproject: Co-supervisor of a one year long project where 14 students developed a spherical blimp, ETHZ, 2011-2012. The project won a price to the best Fokus project, led to a publication, a patent and a startup: www.skye.ethz.ch.

Visitors PhD and PD

- A. Ray (2020), PhD candidate at MIT.
- D. Fiedler (2018), PhD candidate at CTU Prague.
- M. Lorente (2018), PhD candidate at U. Zaragoza.
- H. Andersen (2017), PhD candidate at NUS.

Teams for competitions

- MIT-TU Delft Formula Student Driverless Team. Motion planning advisor (2018-present)

Grants

Personal (PI) Total scientific founding = **0.65M €**

- PPS Didi Udian Technologies, "Shared Mobility on Demand" 2019-2020
120k €
- Amazon Research Award, "Predictive Multi-objective Fleet Routing and Assignment" 2019
80k $
- PPS Continental AG, "Urban mobility study for Singapore" 2018
12k €
- The Netherlands Organisation for Scientific Research (NWO) Veni award, Talent Scheme, "Robots among humans: safe and socially intuitive navigation" 2017-2020
310k €
- Amsterdam Institute for Advanced Metropolitan Solutions (AMS), "Urban robotics" 2017-2018
100k €
- NWO Take Off Phase 1, "Automated drone inspections for aircraft" 2017
40k €
- Swiss Government Excellence Scholarships for Foreign Scholars ESKAS, 50k Chf 2008-2010
- Postgraduate fellowship Caja Madrid, 40k € 2008
- Excellence Scholarship, Centre de Formació Interdisciplinària Superior (CFIS), 30k € 2003-2008
- Spanish National Research Council (CSIC), Introduction to Research Grant, 5k € 2007
- DAAD scholarship for German studies, 1k € 2006.

Co-applicant (co-PI) Total scientific founding for my group = **4M €**

- NWO NWA NeurolabNL, "Perceptive acting under uncertainty: safety solutions for autonomous systems" 2021-2027
500k €, total consortium 3.6M €, partners: TUD, CWI, UvA, RUN, TUE, TNO, NLR, 2getthere, IMEC
- EU H2020 ICT-46-2020 RIA, "HARMONY: Enhancing Healthcare with Assistive Robotic Mobile Manipulation" 2021-2024
780k €, total consortium 5M €, partners: TUD, ETHZ, U. Bonn, CREATE, U. Edinburgh, U. Twente, Region Stockholm, ABB, U. Zurich, IDMIND
- PPS National Police AI Lab Smart mobile robots for intuitive, reliable and safe operation in hazardous environments" 2020-2024
500k €, total consortium 1,000k €, partners: CoR (TUD), TPM (TUD).
- NWO Top Sector Water & Maritime: the Blue route, "Sustainable Transportation and Logistics over Water: Electrification, Automation and Optimization (TRiLOGy)" 2020-2024
439k €, total consortium 878k €, partners: M&TT (TUD), AMS, DEMCON Unmanned Systems B.V., Municipality of Amsterdam, Zoev City B. V., Flying fish.
- EU H2020 MG-2-7-2019 RIA, "SAFE-UP: 'proactive SAFEty systems and tools for a constantly

UPgrading road environment'" 2020-2023
258k €, total consortium 8,000k €, partners: CiGT (TUD), TUE, TNO, IDIADA, Aimsun SLU, Audi AG, Robert Bosch GmbH, Continental, CEA, CERTH, CHALMERS, RWTH Aachen, TH Ingolstadt, Toyota, U. Firenze, VIF, ZF
- PPS Ahold Delhaize AI for Retail Lab Delft (AIRLab Delft)" 2019-2024
1,000k €, total consortium 2,500k €, partners: CoR (TUD), TPM (TUD), Robovalley.
- NICOP Office for Naval Research Global, "Distributed high-level scene reasoning with teams of heterogeneous robots" 2019-2022
270k $, total consortium 450k $, partners: U. Zaragoza
- 3mE Cohesion grant, "Crowd behavior modeling (CBM) of ultra large passenger ships" 2020
60k €, partners: M&TT (TUD).
- 3mE Cohesion grant, "Platform-Based Cooperation Models for Automated Transportation and Logistics" 2019
60k €, partners: M&TT (TUD), DCSC (TUD).
- DDFV's Open Subsidy Call, "CIVICS: Designing and experimenting democratic human-robot partnerships in the smart city" 2018
6.5k €, partners: IDE (TUD), BK (TUD).
- 3mE Cohesion grant, "Shaping collective behaviors through complex interactions" 2018
50k €, partners: DCSC (TUD), P&E (TUD).
- 3mE Cohesion grant, "Formation control for waterborne structures" 2017
50k €, partners: M&TT (TUD), DCSC (TUD).
- TUD Space Institute, "Distributed formation control for remote sensing" 2016
30k €, partners: DCSC (TUD), AE (TUD).

Participant
- NWO SafeVRU (D. Gavrila) - main lead of the motion planning work package, 2018-2022
- Toyota-MIT parallel autonomy (S. Karaman and D. Rus) - informal co-applicant, 2016.
- Singapore-MIT Alliance for Research and Technology - Future Mobility program, 2014-2016.
- Office Naval Research ONR grants pDOT and SMARTS on distributed teams of robots, 2014-2016.
- Boeing-MIT research effort on smart factories, 2014-2016.
- Disney Research Zurich, covered 50% of my PhD costs, 2010-1014.

Service

Policy making
- Member of the IEEE European Public Policy Committee (EPPC) Working Group on ICT. Advisory to the institutions of the European Union, 03/2021-12/2022.

Service to the university
- Member of the education committee (opleidingscommissie) of Mechanical Engineering, 10/2019-present.
- Contribution to the design of the new M.Sc. in Robotics.
- Member of 7 Assistant Professor (Tenure Track) selection committees.
- Member of 2 PhD exam committees (1 x TUD, 1 x ETHZ).
- Member of the council of the PhD School in Industrial Innovation Engineering at University of Modena and Reggio Emilia, Italy, 2018-present.
- Reviewer PhD thesis, Universit degli Studi del Sannio.
- Member of 5 PhD Go/No go meetings, other than my students, from various faculties.
- Member of 50 M.Sc. thesis exams, from various faculties and departments.
- Contribution to the design and setup of the DCSC and CoR labs.
- Several public demonstrations in faculty and university events.

Editorial
- Associate Editor, Autonomous Robots Journal, Springer, 2020-present.
- Associate Editor, IEEE Robotics and Automation Letters (RA-L), IEEE, 2018-present.
- Associate Editor, IEEE Int. Conf. on Unmanned Aircraft Systems (ICUAS), 2020.
- Associate Editor, IEEE/JRS Int. Conf. on Intelligent Robots and Systems (IROS), 2020-present.
- Associate Editor, IEEE Int. Conf. on Robotics and Automation (ICRA), 2017-present.

Organizing committee

- Publication Chair, IEEE Int. Symp. on Multi-robot and Multi-agent Systems (IEEE MRS), 2021.
- Co-organizer DISC Summer School 2020 "Planning, Learning and Control for Multi-Robot and Multi-Agent Systems", Zaandam, Netherlands, 2020.
- Co-organizer 2nd Workshop on Multi-Robot Perception-Driven Control and Planning at IEEE/JRS Int. Conf. on Intelligent Robots and Systems (IROS), Madrid, Spain 2018.
- Co-organizer Workshop on Multi-Robot Perception-Driven Control and Planning at IEEE Int. Conf. in Robotics and Automation (ICRA), Singapore, 2017.

Technical/Program Committee Member

- Co-chair IEEE ICRA Best paper award on Aerial Vehicles, 2020.
- PC member, Robotics: Science and Systems (RSS), 2016-present.
- PC member, Conf. on Autonomous and Multi-Agent Systems (AAMAS), 2018-2019.
- PC member, IEEE Int. Symp. on Multi-robot and Multi-agent Systems (IEEE MRS), 2019.
- PC member, Robotics Track at Conf. on Autonomous and Multi-Agent Systems (AAMAS), 2017-2018.
- PC member, Intelligent Robotics and Multi-Agent Systems track, ACM Symp. on Applied Computing 2016-2018.
- PC member, Pioneers Workshop at Robotics: Science and Systems (RSS), 2018.
- PC member, Blockchain for Robotics Symposium, 2018.
- PC member, Conf. on Artificial Intelligence (AAAI), 2018.
- PC member, International Joint Conference on Artificial Intelligence (IJCAI), 2018

Reviewing activities: grant applications

Flanders Innovation & Entrepreneurship, French National Research Agency (ANR), Israel Science Foundation - Personal research grants, Luxembourg National Research Fund (FNR) - CORE, Singapore Land Transport Authority, Urban Mobility Grand Challenge, Swiss National Science Foundation .

Reviewing activities: journals and conferences

International Journal of Robotics Research, IEEE Transactions on Robotics, IEEE Robotics Magazine, IEEE Transactions on Human-Machine Systems, IEEE Transactions on Intelligent Transportation Systems, IEEE Transactions on Intelligent Vehicles, IEEE Robotics and Automation Letters, Springer Autonomous Robots, Robotics & Autonomous Systems Journal, ACM Surveys, Transportation Research Part C, Transportation Research Part B, IEEE Transactions in Mechatronics, Transactions on Cyber-Physical Systems, Mechatronics Journal, RSS, ICRA, IROS, DARS, IJCAI, AAAI, ITSC, IV.

Publications

Analysis As of 26/02/2021:

- Google Scholar: 98 documents, 3,214 citations, h-index 30, i10-index 50.
- Research Gate: 85 documents, 2,169 citations.
- Scopus: 58 documents, 1416 citations, h-index 19.
- Web of Science: 49 documents, 957 citations, h-index 15.

Peer-reviewed journals

(J30) H. Zhu, F. Martnez Claramunt, B. Brito and J. Alonso-Mora, "Learning Interaction-Aware Trajectory Predictions for Decentralized Multi-Robot Motion Planning in Dynamic Environments", IEEE Robotics and Automation Letters (RA-L), 2021.

(J29) O. de Groot, B. Brito, L. Ferranti, D. Gavrila and J. Alonso-Mora, "Scenario-Based Trajectory Optimization in Uncertain Dynamic Environments", IEEE Robotics and Automation Letters (RA-L), 2021.

(J28) B. Brito, M. Everett, J. P. How and J. Alonso-Mora, "Where to go next: Learning a Subgoal Recommendation Policy for Navigation in Dynamic Environments", IEEE Robotics and Automation Letters (RA-L), 2021.

(J27) C. Zhe, J. Alonso-Mora, X. Bai, D. D. Harabor and P. J. Stuckey, "Integrated Task Assignment and Path Planning for Capacitated Multi-Agent Pickup and Delivery", IEEE Robotics and Automation Letters (RA-L), 2021.

(J26) A. Fielbaum, X. Bai and J. Alonso-Mora, "On-demand ridesharing with optimized pick-up and drop-off walking locations", in Transportation Research Part C: Emerging Technologies, 2021.

(J25) S. Park, M. Cap, J. Alonso-Mora, C. Ratti, and D. Rus "Social Trajectory Planning for Urban Autonomous Surface Vessels", in IEEE Transactions on Robotics (T-RO), Dec. 2020.

(J24) A. Fielbaum and J. Alonso-Mora, "Unreliability in ridesharing systems: Measuring changes in users' times due to new requests", in Transportation Research Part C: Emerging Technologies, Dec. 2020.

(J23) R. Kucharski, A. Fielbaum, J. Alonso-Mora and O. Cats, "If you are late, everyone is late: late passenger arrival and ride-pooling systems' performance", in Transportmetrica A: Transport Science, Oct. 2020.

(J22) N. D. Potdar, G. C. H. D. de Croon and J. Alonso-Mora, "Online Trajectory Planning and Control of a MAV Payload System in Dynamic Environments", Springer Autonomous Robots, Jun. 2020.

(J21) H. Andersen, J. Alonso-Mora, Y.H. Eng, D. Rus and M. Ang, "Trajectory Optimization and Situational Analysis Framework for Autonomous Overtaking with Visibility Maximization", IEEE Transactions on Intelligent Vehicles (T-IV), vol. 5, no. 1, pp. 7-20, Mar. 2020.

(J20) W. Schwarting, A. Pearson, J. Alonso-Mora, S. Karaman, D. Rus, "Social behavior for autonomous vehicles", **Proceedings of the National Academy of Sciences USA (PNAS)**, Nov. 2019.

(J19) B. Brito, B. Floor, L. Ferranti and J. Alonso-Mora, "Model Predictive Contouring Control for Collision Avoidance in Unstructured Dynamic Environments", IEEE Robotics and Automation Letters (RA-L), vol. 4, no. 4, Oct. 2019.

(J18) H. Zhu and J. Alonso-Mora, "Chance-constrained Collision Avoidance for MAVs in Dynamic Environments", IEEE Robotics and Automation Letters (RA-L), vol. 4, no. 2, Apr. 2019.

(J17) T. Naegeli, S. Oberholzer, S. Pluess, J. Alonso-Mora and O. Hilliges, "Flycon: Real-time Environment-independent Multi-view Human Pose Estimation with Aerial Vehicles", ACM Transactions on Graphics (SIGGRAPH Asia), Dec. 2018.

(J16) S. Stevsic, T. Naegeli, J. Alonso-Mora, and O. Hilliges, "Sample Efficient Learning of Path Following and Obstacle Avoidance Behavior for Quadrotors", IEEE Robotics and Automation Letters (RA-L), vol. 3, no. 4, Oct. 2018.

(J15) W. Schwarting, J. Alonso-Mora, L. Paull, S. Karaman, and D. Rus, "Safe Nonlinear Trajectory Generation for Parallel Autonomy With a Dynamic Vehicle Model", IEEE Transactions on Intelligent Transportation Systems (T-ITS), vol. 19, no. 9, pp. 2994-3008, Sept. 2018.

(J14) J. Alonso-Mora, E. Montijano, T. Naegeli, O. Hilliges, M. Schwager and D. Rus "Distributed Multi-robot Formation Control in Dynamic Environments", Autonomous Robots, vol. 43, pp. 1079-1100 Jul. 2018.

(J13) W. Schwarting, J. Alonso-Mora and D. Rus, "Planning and Decision-Making for Autonomous Vehicles", Annual Review of Control, Robotics, and Autonomous Systems, vol. 1, pp. 187-210, May 2018.

(J12) J. Alonso-Mora, P. Beardsley and R. Siegwart, "Cooperative Collision Avoidance for Nonholonomic Robots", IEEE Transactions on Robotics (T-RO), vol. 34, no. 2, pp. 404-420, Apr. 2018.

(J11) J. Alonso-Mora, J. A. DeCastro, V. Raman, D. Rus, and H. Kress-Gazit, "Reactive mission and motion planning with deadlock resolution avoiding dynamic obstacles", Autonomous Robots, Special Issue on Online Decision Making in Multi-Robot Coordination, vol. 42, no. 4, pp. 801-824, Apr. 2018.

(J10) J. Alonso-Mora, S. Baker, and D. Rus, "Multi-robot formation control and object transport in dynamic environments via constrained optimization", The International Journal of Robotics Research (IJRR), vol. 36, no. 9, pp. 1000-1021, Aug. 2017.

(J9) T. Naegeli, L. Meier, A. Domahidi, J. Alonso-Mora, and O. Hilliges, "Real-time Planning for Automated Multi-View Drone Cinematography", ACM Transactions on Graphics (SIGGRAPH), vol. 36, no. 4, Article 132, Jul. 2017.

(J8) T. Naegeli, J. Alonso-Mora, A. Domahidi, D. Rus, and O. Hilliges, "Real-time Motion Planning for Aerial Videography with Dynamic Obstacle Avoidance and Viewpoint Optimization", IEEE Robotics and Automation Letters (RA-L), vol. 2, no. 3, pp. 1696-1703, Jan. 2017.

(J7) J. Alonso-Mora, S. Samaranayake, A. Wallar, E. Frazzoli, and D. Rus, "On-demand high-capacity ride-sharing via dynamic trip-vehicle assignment", **Proceedings National Academy of Science USA (PNAS)**, vol. 114, no. 3, pp. 462-467, Jan. 2017.

(J6) J. Brucker-Cohen, T. Bech, A. Rowe, G. Bushell, L. Birtles, C. Bennewith, O. Bown, D. Sun, P. Su, N. Roy, V. Jan, D. Morozov, T. Digumarti, J. Alonso-Mora, R. Siegwart, P. Beardsley, M. Jacobsen, D.A. Chanel, R. Constant and B. Grosser, "Data Materialities Art Gallery: Introduction and Gallery", in Leonardo, vol. 49, no. 4, pp. 352-374, MIT Press Journals, Aug. 2016.

(J5) J. Alonso-Mora, T. Naegeli, R. Siegwart, P. Beardsley, "Collision Avoidance for Aerial Vehicles in Multi-Agent Scenarios", in Autonomous Robots, vol. 39, no. 1, pp. 101121, June 2015.

(J4) M. Rufli, J. Alonso-Mora, R. Siegwart, "Reciprocal Collision Avoidance with Motion Continuity Constraints", in IEEE Transactions in Robotics (T-RO), vol. 29, no. 4, pp. 899-912, Aug. 2013.

(J3) J. Alonso-Mora, A. Breitenmoser, M. Rufli, R. Siegwart, P. Beardsley, "Image and Animation Display with Multiple Robots", in International Journal of Robotics Research (IJRR), Vol 31, Issue 6, pp. 753-773, May 2012.

(J2) A. Schoellig, J. Alonso-Mora, R. DAndrea, "Limited benefit of Sharing Information in Multi-Agent Iterative Learning Control", in Asian Journal of Control, vol. 14, no. 3, pp. 613-623, May 2012.

(J1) J. Alonso-Mora, A. Husar, M. Serra, J. Riera, "Numerical model for polymer electrolyte membrane fuel cells with experimental application and validation", in Asia Pacific Journal of Chemical Engineering, vol. 4, no. 1, pp. 55-67, Jan. 2009.

Conference proceedings

(C43) B. Brito, H. Zhu, W. Pan and J. Alonso-Mora, "Social-VRNN: One-Shot Multi-modal Trajectory Prediction for Interacting Pedestrians", in 2020 Conference on Robot Learning (CoRL), Nov. 2020

(C42) J. van Lochem, M. Kronmueller, P. van 't Hof and J. Alonso-Mora, "Anticipatory Vehicle Routing for Same-Day Pick-up and Delivery using Historical Data Clustering", in 2020 IEEE 23rd International Conference on Intelligent Transportation Systems (ITSC), Oct. 2020

(C41) A. Serra-Gomez, B. Brito, H. Zhu, J. J. Chung and J. Alonso-Mora, "Whom to Communicate: Learning Efficient Communication for Multi-Robot Collision Avoidance", in Proc. IEEE/RSJ Int. Conf. on Intelligent Robots and Systems (IROS), Oct. 2020.

(C40) J. Lin, H. Zhu and J. Alonso-Mora, "Robust Vision-based Obstacle Avoidance for Micro Aerial Vehicles in Dynamic Environments", in Proc. IEEE Int. Conf. on Robotics and Automation (ICRA), May 2020.

(C39) A. de Ruijter, O. Cats, J. Alonso-Mora and S. Hoogendoorn, "Ride-Sharing Efficiency and Level of Service under Alternative Demand, Behavioral and Pricing Settings", in Proc. Transportation Research Board 2020 Annual Meeting, Jan. 2020.

(C38) A. Wallar, W. Schwartig, J. Alonso-Mora and D. Rus, "Optimizing Multi-class Fleet Compositions for Shared Mobility-as-a-Service", in Proc. IEEE Int. Conf. on Intelligent Transportation Systems (ITSC), Oct. 2019.

(C37) H. Zhu and J. Alonso-Mora, "B-UAVC: Buffered Uncertainty-Aware Voronoi Cells for Probabilistic Multi-Robot Collision Avoidance", in Proc. 2nd IEEE International Symposium on Multi-Robot and Multi-Agent Systems (MRS'19), Aug. 2019.

(C36) A. Wallar, J. Alonso-Mora and D. Rus, "Optimizing Vehicle Distributions and Fleet Sizes for Mobility-on-Demand", in Proc. IEEE Int. Conf. on Robotics and Automation (ICRA), May 2019.

(C35) H. Zhu, J. Juhl, L. Ferranti and J. Alonso-Mora, "Distributed Multi-Robot Formation Splitting and Merging in Dynamic Environments", in Proc. IEEE Int. Conf. on Robotics and Automation (ICRA), May 2019. **IEEE ICRA Best Paper Award on Multi-robot Systems**.

(C34) L. Ferranti, B. Brito, E. Pool, Y. Zheng, R. M. Ensing, R. Happee, B. Shyrokau, J. Kooij, J. Alonso-Mora, and D. M. Gavrila. "SafeVRU: A Research Platform for the Interaction of Self-Driving Vehicles with Vulnerable Road Users", in IEEE Intelligent Vehicles Symposium, Jun. 2019.

(C33) D. Fiedler, M. Certicky, J. Alonso-Mora and M. Cap, "The Impact of Ridesharing in Mobility-on-Demand Systems: Simulation Case Study in Prague", in Proc. IEEE Int. Conf. on Intelligent Transportation Systems (ITSC), Nov. 2018.

(C32) A. Wallar, M. van der Zee, J. Alonso-Mora and D. Rus, "Vehicle Rebalancing for Mobility-on-Demand Systems with Ride-Sharing", in Proc. IEEE/RSJ Int. Conf. on Intelligent Robots and Systems (IROS), Oct. 2018.

(C31) M. Cap and J. Alonso-Mora, "Multi-Objective Analysis of Ridesharing in Automated Mobility-on-Demand", in Proc. Robotics: Science and Systems (RSS), June 2018.

(C30) L. Ferranti, R. R. Negenborn, T. Keviczky and J. Alonso-Mora, "Coordination of Multiple Vessels Via Distributed Nonlinear Model Predictive Control", in Proc. European Control Conference (ECC), June 2018.

(C29) B. Zhou, W. Schwarting, D. Rus, and J. Alonso-Mora, "Joint Multi-Policy Behavior Estimation and Receding-Horizon Trajectory Planning for Automated Urban Driving", in Proc. IEEE Int. Conf. on Robotics and Automation (ICRA), May 2018.

(C28) L. Liebenwein, W. Schwarting, C.-I. Vasile, J. DeCastro, J. Alonso-Mora, S. Karaman, and D. Rus, "Compositional and Contract-based Verification for Autonomous Driving on Road Networks", in Proc. Int. Symp. on Robotics Research (ISRR), pp. 1-16, Dec. 2017.

(C27) J. Alonso-Mora, A. Wallar, and D. Rus, "Predictive Routing for Autonomous Mobility-on-Demand Systems with Ride-Sharing", in Proc. IEEE/RSJ Int. Conf. on Intelligent Robots and Systems (IROS), pp. 3583-3590, Oct. 2017.

(C26) M. Kamel, J. Alonso-Mora, R. Siegwart, and J. I. Nieto, "Robust collision avoidance for multiple micro aerial vehicles using nonlinear model predictive control", in Proc. IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), pp. 236-243, Oct. 2017.

(C25) H. Andersen, W. Schwarting, F. Naser, Y. H. Eng, M. H. Ang Jr, D. Rus, and J. Alonso-Mora, "Trajectory Optimization for Autonomous Overtaking with Visibility Maximization", in Proc. IEEE Int. Conf. on Intelligent Transportation Systems (ITSC), Oct. 2017.

(C24) A. Wallar, B. Araki, R. Chang, J. Alonso-Mora and D. Rus "Foresight: Remote Sensing For Autonomous Vehicles Using a Small Unmanned Aerial Vehicle", in Proc. of the Conf. on Field and Service Robotics (FSR), Sep. 2017.

(C23) F. Naser, D. L. Dorhout, S. Proulx, S. D. Pendleton, H. Andersen, W. Schwarting, L. Paull, J. Alonso -Mora, M. H. Ang, S. Karaman, R. Tedrake, J. J. Leonard, and D. Rus, "A parallel autonomy research platform", in Proc. IEEE Intelligent Vehicles Symposium (IV), pp. 933-940, 2017.

(C22) W. Schwarting, J. Alonso-Mora, L. Paull, S. Karaman, and D. Rus, "Parallel autonomy in automated vehicles: Safe motion generation with minimal intervention", in Proc. IEEE Int. Conf. on Robotics and Automation (ICRA), pp. 1928-1935, 2017.

(C21) L. Paull, J. Tani, H. Ahn, J. Alonso-Mora, L. Carlone, M. Cap, Y. F. Chen, C. Choi, J. Dusek, Y. Fang, D. Hoehener, S.-Y. Liu, M. Novitzky, I. F. Okuyama, J. Pazis, G. Rosman, V. Varricchio, H.-C. Wang, D. S. Yershov, H. Zhao, M. Benjamin, C. Carr, M. T. Zuber, S. Karaman, E. Frazzoli, D. Del Vecchio, D. Rus, J. P. How, J. J. Leonard, and A. Censi, "Duckietown - An open, inexpensive and flexible platform for autonomy education and research", in Proc. IEEE Int. Conf. on Robotics and Automation (ICRA), pp. 1497-1504, 2017.

(C20) J. Alonso-Mora, E. Montijano, M. Schwager, and D. Rus, "Distributed Multi-Robot Navigation in Formation among Obstacles: A Geometric and Optimization Approach with Consensus", in Proc. IEEE Int. Conf. on Robotics and Automation (ICRA), pp. 5356-5363, 2016.

(C19) T. Digumarti, J. Alonso-Mora, R. Siegwart, and P. Beardsley, "Pixelbots 2014", in ACM SIGGRAPH 2016 Art Gallery (SIGGRAPH '16), ACM, New York, NY, USA, 366-367, 2016.

(C18) J. Alonso-Mora, S. Baker, D. Rus, "Multi-robot navigation in formation via sequential convex programming", in Proc. of the IEEE/RSJ Int. Conf. on Intelligent Robots and Systems (IROS), Sep 2015.

(C17) J. DeCastro, J. Alonso-Mora, V. Raman, D. Rus, H. Kress-Gezit, "Collision-Free Reactive Mission and Motion Planning for Multi-Robot Systems", in Proc. of the Int. Symposium on Robotics Research (ISRR), Sep 2015.

(C16) J. Alonso-Mora, R. Knepper, R. Siegwart, D. Rus, "Local motion planning for collaborative manipulation of deformable objects in dynamic environments", in Proc. of the IEEE Int. Conf. Robotics and Automation (ICRA), May 2015.

(C15) J. Alonso-Mora, S. Haegeli Lohaus, P. Leemann, R. Siegwart, P. Beardsley, "Gesture based human - robot swarm interaction applied to an interactive display", in Proc. of the IEEE Int. Conf. Robotics and Automation (ICRA), May 2015.

(C14) F. Schiano, J. Alonso-Mora, K. Rudin, P. Beardsley, R. Siegwart, B. Siciliano, "Towards Estimation and Correction of Wind Effects on a Quadrotor UAV", in Proc. of the Int. Micro Air Vehicle Conference and Competition, Aug. 2014.

(C13) D. Jud, J. Alonso-Mora, J. Rehder, R. Siegwart, P. Beardsley, "Customized Sensing for Robot Swarms", in Proc. of the Int. Symposium on Experimental Robotics, June. 2014.

(C12) J. Alonso-Mora, P. Gohl, S. Watson, R. Siegwart, P. Beardsley, "Shared Control of Autonomous Vehicles based on Velocity Space Optimization", in Proc. of the IEEE Int. Conf. on Robotics and Automation (ICRA), June 2014.

(C11) M. Schoch, J. Alonso-Mora, R. Siegwart, P. Beardsley, "Viewpoint and Trajectory Optimization for Animation Display with a Large Group of Aerial Vehicles", in Proc. of the IEEE Int. Conf. on Robotics and Automation (ICRA), June 2014.

(C10) J. Alonso-Mora, R. Siegwart, P. Beardsley, "Human - Robot Swarm Interaction for Entertainment", ACM/IEEE Int. Conf. on Human-Robot Interaction, Mar. 2014, **Best Video Award 2^{nd} Prize**.

(C9) J. Bento, N. Derbinsky, J. Alonso-Mora, J. Yedidia, "A message-passing algorithm for multi-agent trajectory planning", In Advances in Neural Information Processing Systems (NIPS), Dec. 2013.

(C8) M. Burri, L. Gasser, M. K. ch, M. Krebs, S. Laube, A. Ledergerber, D. Meier, R. Michaud, L. Mosimann, L. Muri, C. Ruch, A. Schaffner, N. Vuilliomenet, J. Weichart, K. Rudin, S. Leutenegger, J. Alonso-Mora, R. Siegwart, P. Beardsley, "Design and Control of a Spherical Omnidirectional Blimp", in Proc. of the IEEE/RSJ Int. Conf. on Intelligent Robots and Systems (IROS), Nov. 2013.

(C7) J. Alonso-Mora, M. Rufli, R. Siegwart, P. Beardsley, "Collision Avoidance for Multiple Agents with Joint Utility Maximization", in Proc. of the IEEE Int. Conf. on Robotics and Automation (ICRA), May 2013.

(C6) J. Alonso-Mora, M. Schoch, A. Breitenmoser, R. Siegwart, P. Beardsley, "Object and Animation Display with Multiple Aerial Vehicles", in Proc. of the IEEE/RSJ Int. Conf. on Intelligent Robots and Systems (IROS), Oct. 2012.

(C5) S. Hauri, J. Alonso-Mora, A. Breitenmoser, R. Siegwart, P. Beardsley, "Multi-Robot Formation Control via a Real-Time Drawing Interface", in Proc. of the 8th Int. Conf. on Field and Service Robots (FSR), Jul. 2012.

(C4) J. Alonso-Mora, A. Breitenmoser, P. Beardsley, R. Siegwart, "Reciprocal Collision Avoidance for Multiple Car-like Robots", in Proc. of the IEEE Int. Conf. on Robotics and Automation (ICRA), May 2012.

(C3) J. Alonso-Mora, A. Breitenmoser, M. Rufli, R. Siegwart, P. Beardsley, "Multi-Robot System for Artistic Pattern Formation", in Proc. of the IEEE Int. Conf. on Robotics and Automation (ICRA), May 2011.

(C2) A. Schoellig, J. Alonso-Mora, R. DAndrea, "Independent vs. Joint Estimation in Multi-Agent Iterative Learning Control", in Proc. of the Conf. on Decision and Control (CDC), Dec. 2010

(C1) J. Alonso-Mora, A. Breitenmoser, M. Rufli, P. Beardsley, R. Siegwart, "Optimal Reciprocal Collision Avoidance for Multiple Non-Holonomic Robots", in Proc. of the Int. Symp. on Distributed Autonomous Robotics Systems (DARS), Oct. 2010, **Nominated Best Student Paper Award**.

Workshops, conferences without proceedings and technical reports

(W7) A. Fielbaum and J. Alonso-Mora, "On-demand ridesharing with optimized pick-up and drop-off walking locations", paper presented at the Verolog 2020 Conference, Hamburg, June 2020.

(W6) J. Alonso-Mora, K. Savla, D. Rus, "Optimal Control and Optimization Methods for Multi-robot Systems", in Tutorial on Multi-Robot Systems at Robotics Science and Systems (RSS), July. 2015.

(W5) J. Alonso-Mora, R. Siegwart, D. Rus, "Collaborative Motion Planning for Multi-Agent Systems", in Workshop The future of multiple-robot research and its multiple identities at the RSJ/IEEE Int. Conf. on Robotics and Intelligent Systems (IROS), Sept. 2014.

(W4) R. Grieder, J. Alonso-Mora, C. Bloeglinger, R. Siegwart, P. Beardsley, "Multi-robot Control and Interaction with a Hand-held Tablet", in Workshop Crossing the Reality Gap: Control, Human Interaction and Cloud Technology for Multi- and Many- Robot Systems at the IEEE Int. Conf. on Robotics and Automation (ICRA), June 2014.

(W3) P. Gohl , J. Alonso-Mora, R. Siegwart, P. Beardsley, "Vision-Based Localization for Multiple Robots with Absolute and Relative Measurements", tech report, Sept. 2012.

(W2) J. Alonso-Mora, A. Breitenmoser, S. Wismer, R. Siegwart, P. Beardsley, "Human-Robot Shared Control in a Large Robot Swarm", in Workshop Many-Robot Systems: Crossing the Reality Gap at the IEEE Int. Conf. on Robotics and Automation (ICRA), May 2012.

(W1) J. Alonso-Mora, A. Breitenmoser, M. Rufli, S. Haag, G. Caprari, R. Siegwart, P. Beardsley, "DisplaySwarm: A robot swarm displaying images", in IEEE/RSJ Int. Conf. on Intelligent Robots and Systems, Symposium: Robot Demonstrations, Oct. 2011.

Thesis

(T4) J. Alonso-Mora, "Collaborative Motion Planning for Multi-Agent Systems", Doctoral Dissertation, ETH Zurich, Supervised: Prof. R. Siegwart, Dr. P. Beardsley, Co-examiners: Prof. R. D'Andrea, Prof. D. Rus, Mar. 2014.

(T3) J. Alonso-Mora, "Multi-agent control for choreographic image display", Master Thesis, Autonomous Systems Lab, ETH & Disney Research Zurich, Supervised: Prof. R. Siegwart, Dr. P. Beardsley, May 2010.

(T2) J. Alonso-Mora, "Multi-agent learning through experience", Semester Project, I. Dynamic Systems and Control, ETH Zurich. Supervisors: Prof. A. Schoellig, Prof. R. D'Andrea, Jun. 2009.

(T1) J. Alonso-Mora, "Study of Two Coupled Rigid Bodies", Semester Project, Chair of Geometric Analysis, EPF Lausanne. Supervisor: Prof. T. Ratiu, Feb. 2008.

Patents

(P10) "Social Behavior for Autonomous Vehicles", US Patent App., 2020.

(P9) "On-Demand High-Capacity Ride-Sharing Via Dynamic Trip-Vehicle Assignment with Future Requests", US Patent App. 15/941,449, 2018.

(P8) "System for On-Demand High-Capacity Ride-Sharing Via Dynamic Trip-Vehicle Assignment and Related Techniques", US patent App. 15/877,935, 2018.

(P7) "Aircraft, Methods for Providing Optical Information, Method for Transmission of Acoustic Information and Method for Observing or Tracking an Object", US Patent App. 14/395,657, 2015.

(P6) "Systems, methods, and apparatuses for stereoscopic imaging", US patent 9,992,482, 2018.

(P5) "Robust and autonomous docking and recharging of quadrotors", US patent 9,573,701, 2017.

(P4) "Shared control of semi-autonomous vehicles including collision avoidance in multi-agent scenarios", US patent 9,216,745, 2015.

(P3) "Display with robotic pixels", US patent 9,082,233, 2015.

(P2) "Robotic Texture", US patent 9,067,320, 2015.

(P1) "Display with robotic pixels", US patent 8,723,872, 2014.

Invited Talks

Plenary talks

-"Trajectory optimization among decision-making agents: self-driving cars, drones and multi-robot systems", at IEEE Int. Conf. on Unmanned Systems (ICUS), Nov. 2020

-"Multi-robot motion planning and coordination for object transport in dynamic environments", at Workshop on Robotic Manipulation of Deformable Objects, IEEE/JRS Int. Conf. on Intelligent Robots and Systems (IROS), Oct. 2020

-"Trajectory optimization for urban driving among decision-making vehicles", at Workshop on Decision-making for Self-driving Cars in Dynamic and Complex Environments, IEEE Int. Conf. on Intelligent Transportation Systems (ITSC), Oct. 2019

-"Predictive routing and multi-objective fleet sizing for shared mobility-on-demand", at Workshop on Autonomous and Connected Transportation Systems: Modeling, Control, and Deployment, IEEE Int. Conf. on Intelligent Transportation Systems (ITSC), Oct. 2019

-"Predictive routing and multi-objective fleet sizing for shared mobility-on-demand", at 3eCAV Workshop, IFP Energies nouvelles, Paris, Sep. 2019

- "Robots among humans: safe and socially intuitive navigation", at Xperience Day, TU Delft Alumni, Delft, June 2019

- "Robots among humans: safe and socially intuitive navigation", at Talent Scheme Laureates meeting 2018, Netherlands Organisation for Scientific Research (NWO), Utrecht, Nov. 2018

- "High-capacity Ride-sharing in Autonomous Transportation Systems", at Future Urban Mobility Summer Research Workshops, SMART, Singapore, July 2018

- "Trajectory Planning for Multiple Robots in Dynamic Environments", at Robotics: Science and Systems (RSS), Workshop on Challenges and Opportunities for Resilient Collective Intelligence in Subterranean Environments, Pittsburgh, June 2018.

- "Aerial cinematography: towards the cameraman of the future", at IEEE Int. Conf. Robotics and Automation (ICRA), Workshop: Human Robot Interaction with UAVs: Challenges and Frontiers, Brisbane, Australia, May 2018.

- "Future of the Camera man", at the In.Air Drone Film Festival, Amsterdam, Netherlands, May 2018.

- "Aerial cinematography: towards the cameraman of the future", at Best Delft Swarm Robotics, May 2018.

- "Control y navegación de robots autónomos: drones, taxis y manipuladores móviles", plenary speaker at the Graduation Ceremony Centre de Formacio Interdisciplinaria Superior (CFIS), UPC, Barcelona, Spain, Dec. 2017.

- "Dynamic routing and assignment for high-capacity ride sharing in intelligent transportation systems", at the DBSS Symposium - Simulation & Data: An Unbreakable Bond, Dutch Benelux Simulation Society, Delft, Netherlands, Sep. 2017.

- "High-capacity ride-sharing and planning in intelligent autonomous transportation systems", at the Machine Intelligence in Autonomous Vehicles Summit Amsterdam, Re.Work, Amsterdam, Netherlands, June 2017.
- "Distributed formation control for teams of mobile robots", at the Office of Naval Research ONR Science of Autonomy Meeting, Washington DC, Aug. USA, 2016.
- "Constrained optimization methods for collaborative multi-robot motion planning and control", at the EITA-Smart Cities Forum, Boston, USA, Aug. USA, 2016.
- "Optimization and optimal control for multi-robot systems", at Robotics Science and Systems (RSS), Tutorial on Multi-robot Systems, Rome, Italy, Jul. 2015.
- Multiple research talks (conference paper) in international conferences and workshops.

Seminars

Topic: "Autonomous Planning and Control for Multi-Robot Systems and Intelligent Transportation"
- Ortec, Zoetemeer, Netherlands, 2019.
- Czech Technical University, Prague, Czech Republic, 2019.
- Didi Udian Tech, Shenzhen, China, 2019.
- Universidad Politecnica de Madrid, Madrid, Spain, 2018.
- University of Zurich, Zurich, Switzerland, 2018.
- IBM Research, Zurich, Switzerland, 2018.
- Taxify, Tallinn, Estonia, 2018.
- 2GetThere, Utrecht, Netherlands, 2018.
- Amsterdam Institute for Advanced Metropolitan Solutions (AMS), Amsterdam, Netherlands, 2018.
- Universidad de Zaragoza, Zaragoza, Spain, 2017.
- Instituto de Robotica e Informatica Industrial (IRI-CSIC), Barcelona, Spain, 2017.
- University of Groeningen, Groeningen, Netherlands 2017.
- Algorithmics group, TU Delft, Delft, Netherlands 2017.
- Continental AG, Frankfurt, Germany, 2017.
- Toyota-CSAIL annual research review, Cambridge, USA, 2016.
- Massachusetts Institute of Technology MIT, Cambridge, USA, 2016.
- GRASP lab, University of Pennsylvania, Philadelphia, USA, 2016.
- University of Twente, Enschede, The Netherlands, 2015.
- TU Delft, Delft, The Netherlands, 2015.
- SMART - National University of Singapore, Singapore, 2015.
- Harvard University, Cambridge, USA, 2015.
- Cornell University, Ithaca, NY, 2014.
- Massachusetts Institute of Technology, Cambridge, USA, 2013.
- Kantonsschule Computer Science Week at ETHZ, Zurich, Switzerland, 2012.
- Tokyo Disneyland, Tokyo, Japan, 2012.
- Pixar Animation Studios, Emmeriville, USA, 2011.
- Walt Disney Imagineering, Glendale, USA, 2011.
- Automatic Control Laboratory ETHZ, Zurich, Switzerland, 2010.

Professional Memberships

- IEEE Senior Member (2020-present), Member (2015-2020), Student Member (2010-2014)
- IEEE Robotics and Automation Society (2010-present)
- IEEE Intelligent Transportation Systems Society (2019-present)
- IEEE RAS TC Multi-Robot Systems (2016-present)
- IEEE RAS TC Motion Planning (2016-present)
- Amsterdam Institute for Advanced Metropolitan Solutions (2016-present)
- TU Delft Robotics Institute (2016-present)
- TU Delft Transportation Institute (2016-present)
- TU Delft Space Institute (2016-present)
- Researchlab Automated Driving Delft (2017-present)
- Researchlab Autonomous Shipping Delft (2019-present)
- ShARE Economy, EPF Lausanne (Member, 2008)

- Barcelona's Student Chapter, Society for Industrial and Applied Mathematics (Member, 2006-08)
- ETSEIB student association for Space Exploration (Member, pre-finalist ESA parabolic flight, 2005-08)

Outreach

Public demonstrations

- Many lab visits for researchers, collaborators and sponsors at TUD, MIT, ETH and Disney Research Zurich.
- Public demonstrations at TUD for the 3mE family day, and ICAPS conference (2018) among others.
- MIT Open doors, USA, 2016. We showed our Toyota-CSAIL self-driving car to the public during one Saturday.
- Scientifica, Switzerland, 2012, 2013 and 2015. We demoed our multi-robot display during a weekend, receiving numerous visits by interested kids and adults.
- Disney Imagineering Open House, USA.

Media appearances

- Dutch NOS TV evening news (2019). Demonstration of our self-driving vehicle. [view]
- Spanish Antena 3 TV prime-time show "El Hormiguero" (2015). Live demonstration and interview in prime time Spanish television. Over 3 million viewers. [view]
- BBC TV Royal Institution Christmas Lectures (2014). Recorded demonstration. Over 1 million viewers.
- Interview in Bloomberg radio (2017).
- Articles and interviews in many printed and on-line media outlets, including: NRC, New Scientist (NL), The New York Times, Bloomberg, Financial Times, The Atlantic, CNN, Washington Post, Fox news, Time, Fortune, The Boston Globe, El Pais, Expansion, El Confidencial, Neue Zuercher Zeitung, IEEE Spectrum, Wired, New Scientist, Gizmodo, MIT news, CNET, The Telegraph, The Verge, Newsweek, etc.

Entrepreneurship

- Routable AI: Urban mobility, Co-founder, Boston & Delft, 2019-present.
- Tinamu labs: Aerial videography, Scientific advisor, Zurich, 2018-present.
- Mainblades: Aerial inspection, PI NWO-TakeOff grant, Den Haag, 2017.
- Aerotain: Interactive shows with drones, Initiator of the precursor student project, Zurich, 2013.

Soft Skills

- Personal Development Program, TU Delft, Netherlands, 2017
- Postdoc Leadership Workshop, MIT, USA, 2016
- Venture Challenge - Start-up business plan, market analysis and pitch, Switzerland, 2013
- International Business Management for Engineers, ETH Zurich, Switzerland, 2012
- Horizon 3.0 Business Technology Office Workshop, McKinsey & Co., Dubai, UAE, 2008.

Computer Skills

C/C++ Programming language, Python, ROS Robotic Operating System, Optimization (CPLEX, MOSEK, SNOPT, GUROBI, Acado), Matlab, Simulink, Maple, AutoCad, Solidworks CAD, Ansys, LaTeX, Git/svn, Qt, cloud computing.

Languages

English (Professional level), Spanish (Mother tongue), German (Conversational level), French (Conversational level), Catalan (Conversational level), Dutch (Basic level).

Updated on March 16, 2021