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R E S U M E
Assist. Prof. Vadim Indelman

Department of Aerospace Engineering
Technion—Israel Institute of Technology
Haifa 32000, Israel

Office: Lady Davis building, Room 738

Email: vadim.indelman@technion.ac.il

Web site: <http://vindelman.net.technion.ac.il>

ACADEMIC DEGREES

- Ph.D. (direct track), Aerospace Engineering, Technion - IIT, 2011
- M.A., Aerospace Engineering, Technion - IIT, 2008
- B.A. (Cum Laude), Computer Science, Technion – IIT, 2002
- B.Sc. (Summa Cum Laude), Aerospace Engineering, Technion - IIT, 2002

ACADEMIC APPOINTMENTS

2014-present	Assistant Professor, Department of Aerospace Engineering, Technion – IIT
2012-2014	Post Doctorate Fellow, Institute of Robotics and Intelligent Machines Georgia Institute of Technology, Atlanta, USA

PROFESSIONAL EXPERIENCE

2017-present	Independent consultant
2011-2012	Researcher and algorithm developer, Computer vision department, RAFAEL, Advanced Defense Systems, Israel
2004-2007	Algorithm developer, Navigation and Control departments, RAFAEL, Advanced Defense Systems, Israel
2002-2008	Technical project officer, Engineering-level projects supervision in defense industries on behalf of the Israel Air Force (IAF).

RESEARCH INTERESTS

Autonomous navigation and mapping, consistent distributed information fusion, belief-space planning and active sensing, decision making under uncertainty, distributed robust perception, inference with probabilistic graphical models, data-driven and end-to-end autonomous perception, vision-aided navigation (VAN) and simultaneous localization and mapping (SLAM).

TEACHING EXPERIENCE

- Introduced and developed the course “Autonomous Navigation and Perception” (joint level), Department of Aerospace Engineering, Technion.
- Introduced and developed the course “Vision Aided Navigation” (joint level), Department of Aerospace Engineering, Technion.
- Lecturer in additional courses in Department of Aerospace Engineering, Technion: “Navigation and Guidance Systems”, “Flight Mechanics”, “Advanced Control Laboratory”
- Guest lecturing in “Introduction to Robotics” (joint level), Computer Science Department, Technion.
- Guest lecturing in “Algorithmic Robotics and Motion Planning” (graduate level course), Computer Science Department, Tel Aviv University.
- Guest lecturing in “3D Reconstruction” (graduate level course), College of Computing, Georgia Institute of Technology.
- Teaching assistant, “Dynamic Systems” (undergraduate level course), Department of Aerospace Engineering, Technion.

TECHNION ACTIVITIES

- 2019-present: introduced and co-organized Technion’s Robotics and Autonomous Systems seminars

DEPARTMENTAL ACTIVITIES

- 11/2018-present: leading the organization of Aerospace Department’s strategic discussion and event on academic development directions for the following years.
- 2018-present, Aerospace Department representative in Technion’s Autonomous Systems Program (TASP).
- 2017-2018, Faculty Council Secretary, Department of Aerospace Engineering, Technion.
- 2015-2017, Aerospace Department representative in Department of Scientific and Technological Education, Technion.

NATIONAL ACTIVITIES

- 2018-present: Member of the national robotics initiative

PUBLIC PROFESSIONAL ACTIVITIES & SERVICE

- 09/2019-present, Co-chair of the IEEE Robotics and Automation Society Technical Committee on Algorithms for Planning and Control of Robot Motion

Editorial Board:

- 09/2017-present, Associate Editor, IEEE Robotics and Automation Letters (RA-L)

Proposal Reviewer:

- Israel's Ministry of Science and Technology, robotics proposals: 2020

Conference and Workshop Activities:

- Session chair at the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 2019: *Vision-based Navigation*
- Session chair at the Israeli Conference on Robotics (ICR), 2019: *Localization and Navigation*
- Session chair at the 59th Israel Annual Conference on Aerospace Sciences (59th IACAS), 2019: *Autonomous Systems*
- Session chair at the 58th Israel Annual Conference on Aerospace Sciences (58th IACAS), 2018: *Autonomous Systems*
- Workshop co-organizer: Israeli Association for Automatic Control (IAAC) workshop "Navigation Systems and Applications", 2020, 2018
- Session chair at the IEEE International Conference on Robotics and Automation (ICRA), 2017: *SLAM*
- Session chair at the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 2016: *Mobile Robots*
- Session chair at the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 2016: *Sensor Based Planning*
- Session co-chair at the IEEE International Conference on Robotics and Automation (ICRA), 2016: *AI Reasoning Methods*
- Session chair at the Israeli Conference on Robotics (ICR), 2016: *SLAM and Autonomous Navigation*
- Session chair at the IEEE International Conference on Robotics and Automation (ICRA), 2014: *Path planning: Multiple Mobile Robots and Agents*
- Session co-chair at the IEEE International Conference on Robotics and Automation (ICRA), 2014: *SLAM: Visual Odometry*
- Workshop Co-organizer: Workshop on Multi-View Geometry in Robotics, Robotics: Science and Systems (RSS), 2013 – 2015
- Program committee (PC) member: ICRA'18 Workshop on Perception, Inference, and Learning for Joint Semantic, Geometric, and Physical Understanding, 2018
- Program committee (PC) member, Robotics: Science and Systems (RSS), 2012, 2013, 2015
- Program committee (PC) member, IEEE Symposium on Safety, Security and Rescue Robotics, 2013

Journal Reviewer:

- International Journal of Robotics Research (IJRR): 2016-2018, 2014, 2012
- IEEE Transactions on Robotics (T-RO): 2019, 2013-2015
- Transactions on Pattern Analysis and Machine Intelligence (TPAMI): 2018
- IEEE Robotics and Automation Letters (RA-L): 2015
- Journal of Guidance, Control and Dynamics (JGCD): 2015
- Advances in Space Research: 2014
- Robotics Journal: 2015

- Autonomous Robots: 2014
- IET Control Theory & Applications (CTA): 2014
- IEEE Transactions on Vehicular Technology (TVT): 2013
- IEEE Sensors Journal: 2012
- Computer Vision and Image Understanding (CVIU): 2011
- Journal of Field Robotics (JFR): 2011

Conference Reviewer:

- Robotics Science and Systems Conference (RSS): 2019, 2016, 2015, 2013, 2012
- International Symposium on Robotics Research (ISRR): 2019, 2017, 2015
- IEEE International Conference on Robotics and Automation (ICRA): 2014-2019
- IEEE Conference on Intelligent Robotic Systems (IROS): 2012-2019
- International Symposium on Multi-Robot and Multi-Agent Systems (MRS): 2019, 2017
- Computer Vision and Pattern Recognition (CVPR): 2014, 2013
- IEEE Symposium on Safety, Security and Rescue Robotics (SSRR): 2013
- Third Joint 3DIM/3DPVT Conference: 2013
- IEEE Workshop on Robot Vision (WORV): 2013
- International Conference on 3D Imaging, Modeling, Processing, Visualization, and Transmission (3DIMPVT): 2012
- BarSym Symposium on Estimation, Navigation, and Spacecraft Control: 2012

MEMBERSHIP IN PROFESSIONAL SOCIETIES

- IEEE membership
- Member of the Technical Committee on Multi-Robot Systems (TC MRS) of the IEEE Robotics and Automation Society

FELLOWSHIPS, AWARDS AND HONORS

- 2015: **Best Workshop Poster Award**, workshop on the Problem of Mobile Sensors, in conjunction with Robotics Science and Systems (RSS) conference, 2015
- 2013: **Merhav Award** for top PhD research in GNC-related areas
- 2013: **Best Poster Award**, Workshop on Robot Vision (WoRV 2013)
- 2010: **Hanin Award** for excellence in research
- 2009: **Ilan Ramon Excellence Scholarship Award**
- 2008: **Best Teaching Assistant Award**, Aerospace Engineering, Technion
- 2002,2006: **Quarterly Excellence Awards**, RAFAEL ltd.
- 2002: B.Sc. **Summa Cum Laude**, Aerospace Engineering, Technion
- 2002: B.A. **Cum Laude**, Computer Science, Technion
- 1998-2002: **President's Excellence Honor Awards**, Technion

GRADUATE STUDENTS

(PA=Primary Adviser, AA=Additional Adviser)

Completed

M.Sc. Students:

- 2014-2016 Tal Regev, Department of Computer Science, Technion, PA
 Thesis title: “Multi-Robot Decentralized Belief Space Planning in Unknown Environments”
 Next position: Lab manager and software engineer at ANPL
- 2015-2017 Shira Har-Nes, Department of Aerospace Engineering, Technion, PA
 Thesis title: “Belief Space Planning for Autonomous Navigation while Modeling Landmark Identification”
 Next position: Engineer at Rafael ltd.
- 2015-2017 Antony Thomas, Department of Aerospace Engineering, Technion, PA
 Recipient of the **Sherman Interdisciplinary fellowship for graduate students**, 2016
 Thesis title: “Incorporating Data Association Within Belief Space Planning For Robust Autonomous Navigation”
 Next position: Ph.D. student at the University of Genoa, Italy
- 2015-2017 Michael Chojnacki, TASP, Technion, PA (AA: Ehud Rivlin)
 Thesis title: “Vision-based Dynamic Target Trajectory and Ego-motion Estimation Using Incremental Light Bundle Adjustment”
 Next position: Startup co-founder (Baseline Vision ltd.)
- 2015-2017 Dmitry Kopitkov, TASP, Technion, PA
Summa Cum Laude M.Sc. degree
 Recipient of the **Gutwirth and Jacobs excellence fellowship**, 2016 and 2017
 Thesis title: “Efficient Belief Space Planning in High-dimensional State Spaces by Exploiting Sparsity and Calculation Re-use”
 Next position: Ph.D. student at ANPL
- 2014-2017 Yair Ben Elisha, Department of Aerospace Engineering, Technion, PA
 Thesis title: “Cooperative Multi-Robot Belief Space Planning for Visual-Inertial Navigation and Online Sensor Calibration”
 Next position: Major at IAF
- 2016-2018 Vladimir Ovechkin, TASP, Technion, PA
 Thesis title: “Bundle Adjustment with Feature Scale Constraints for Enhanced Estimation Accuracy”
 Next position: Computer vision engineer at Applied Materials ltd.

M.E. Students:

- 2016-2017 Itay Guy, TASP, Technion, PA

2016-2018 Or Salmon, TASP, Technion, PA
Next position: Startup co-founder

In Progress

Ph.D. Students:

- 2015- Elad Farhi, direct track Ph.D., TASP, Technion, PA
Thesis title: “Joint Incremental Inference and Belief Space Planning for Online Operations of Autonomous Systems”
Expected year of graduation: 2020
- 2017- Dmitry Kopitkov, TASP, Technion, PA
Thesis title: “Deep Probabilistic Inference and Information Recovery”
Expected year of graduation: 2020
- 2017- Vladimr Tchoyev, Department of Aerospace Engineering, Technion, PA
Thesis title: “Multi-Robot Autonomous Classification Under Uncertainty”
Expected year of graduation: 2021
- 2015- Khen Elimelech, direct track Ph.D., TASP, Technion, PA
Thesis title: “Efficient Decision Making under Uncertainty Using Belief Sparsification”
Expected year of graduation: 2020
- 2015- Yuri Feldman, direct track Ph.D., Department of Computer Science, Technion, PA
Thesis title: “Autonomous Semantic Perception in Uncertain Environments”
Expected year of graduation: 2021
- 2020- Andrey Zhitnikov, TASP, Technion, PA

M.Sc. Students:

- 2016- Roe Mor, Department of Computer Science, Technion, PA (AA: Michael Lindenbaum)
Thesis title: “Qualitative Relative Constraints Based SLAM and Obstacle Avoidance”
Expected year of graduation: 2020
- 2018- Ohad Shelly, TASP, Technion, PA
Thesis title: “Computationally Efficient Multimodal Perception and Belief Space Planning”
Expected year of graduation: 2020
- 2018- Omri Asraf, Department of Aerospace Engineering, Technion, PA
Thesis title: “Experience-Based Prediction of Unknown Environments for Enhanced Belief Space Planning”
Expected year of graduation: 2020
- 2019- Moshe Shienman, TASP, Technion, PA
- 2019- Itai Zilberman, Department of Electrical Engineering, Technion, AA (PA: Ehud Rivlin)

2019- Gilad Rotman, TASP, Technion, PA

UNDERGRADUATE STUDENTS

(CS=Computer Science, EE=Electrical Engineering, AE=Aerospace Engineering, ME=Mechanical Engineering)

Dan Goldberg (CS, 2014-2015), Dror Hurwitz (AE, 2016), Maor Kereth (ME, summer 2016), Dror Bar On (AE, 2016), Nikita Dizhur (CS, 2016-2017), Roy Velich (CS, 2016-2017), Steven Athouel (CS, 2017 Spring), Amit Weiss (CS, 2017 Fall), Amit Solomon (CS, 2017 Fall), Margarita Zabolotny (AE, 2017-2018), Nimrod Sideman (AE, 2017 Fall), Daniel Khapun (CS, 2018), Dvir Perry (CS, 2018 Spring), Tom Norman (EE, 2018-Present), Amitai Haimovich (AE, 2018), Ariel Dobrovenski (EE, 2018-Present), Eva Epelbaum (CS, 2018-2019), Adi Amuzig (AE, 2019 Spring), Shai Guendelman (CS, 2019 Fall), Gregorii Melnikov (CS, 2019 Fall - Present).

VISITING STUDENTS & INTERNATIONAL INTERNS

Sarah Brent (Clark University, summer 2016), Steven Athouel (L'Ecole polytechnique Université Paris, Spring 2018)

SPONSORED LONG-TERM VISITORS AND POST-DOCTORAL ASSOCIATES

- Dr. Andrej Kitanov, since April 2017
- Dr. Shashank Pathak, November 2015 – June 2017
- Dr. Elina Moldavskaya, October 2015 – June 2016

ADDITIONAL STAFF SUPPORTED

- Evgeny Koretsky, lab engineer, since March 2019
- Asaf Feniger, lab engineer, April 2015 - June 2018
- Tal Regev, software engineer, October 2016 - August 2017, July 2018 – January 2019

RESEARCH GRANTS

Competitive:

10/2015-10/2019	<p>Israel Science Foundation (ISF)</p> <p>Role: Principal Investigator</p> <p>Title: "Information-Theoretic Decision Making and Planning under Uncertainty in the Conservative Belief Space: a New Paradigm"</p> <p>Amount: \$280,000 (\$70,000 per year, for 4 years)</p>
12/2015-12/2018	<p>Ministry of Science Technology and Space (MOST)</p> <p>Russian-Israeli Cooperative Scientific Research</p> <p>Role: Principal Investigator</p> <p>Title: "Localization, Mapping and Path Planning for an Unmanned Ground Vehicle (UGV) with the Aid of a Group of Unmanned Aerial Vehicles (UAVs) Using Active Collaborative Vision and Multi-Robot Belief Space Planning"</p>

Amount: \$120,000 (\$40,000 per year, for 3 years)

- 01/2019-01/2022 Ministry of Science Technology and Space (MOST)
 Role: Principal Investigator
 Title: “Autonomous Semantic Robust Perception in Uncertain Environments”
 Amount: \$157,000 (\$52,000 per year, for 3 years)
- 01/2019-01/2022 Ministry of Science Technology and Space (MOST)
 Role: Principal Investigator
 Additional Principal Investigator: Prof. Michael Lindenbaum
 Title: “Autonomous Navigation and Mapping via Qualitative Spatial Representation and Probabilistic Planning”
 Amount for both PIs: \$322,000 (\$107,000 per year, for 3 years)

Industrial and other sources:

- 09/2014-09/2016 Technion Autonomous Systems Program (TASP)
 Role: Principal Investigator
 Amount: \$42,000
- 08/2015-08/2016 Technion Autonomous Systems Program (TASP)
 Role: Principal Investigator
 Amount: \$27,500
- 09/2015-09/2016 Israel Ministry of Defence (MAFAT)
 Role: Principal Investigator
 Amount: \$50,000
- 11/2016-11/2017 Technion Autonomous Systems Program (TASP)
 Role: Principal Investigator
 Amount: \$25,000
- 11/2017-11/2018 Technion Autonomous Systems Program (TASP)
 Role: Principal Investigator
 Amount: \$15,000
- 02/2017-02/2018 Israel Ministry of Defence (MAFAT)
 Role: Principal Investigator
 Amount: \$78,000
- 02/2018-02/2019 Israel Ministry of Defence (MAFAT)
 Role: Principal Investigator
 Amount: \$78,000
- 03/2018-02/2019 Technion Applied Research Grant
 Role: Principal Investigator
 Amount: \$20,000
- 07/2018-06/2019 Intel ltd.
 Role: Principal Investigator

Amount: \$20,000

09/2018-08/2019	Hyundai ltd. Role: Principal Investigator Amount: \$200,000
01/2020-12/2020	Gordon Center for System Engineering Grant Role: Principal Investigator Amount: \$20,000

INVITED TALKS (International)

- “Distributed perception and estimation in multi-robot systems”, workshop on Principles of Multi-Robot Systems, in conjunction with Robotics Science and Systems (RSS) conference, Rome, Italy, July 2015.
- “Advances in Computationally Efficient and Robust (Multi-Robot) Belief Space Planning in High-Dimensional State Spaces”, 2nd Workshop on Multi-Robot Perception-Driven Control and Planning at the 2018 IEEE/RSJ International Conference on Intelligent Robot and Systems (IROS), October 2018.

INVITED TALKS (In Israel)

- “Distributed Cooperative Robust Localization and Mapping from Arbitrary Initial Poses via EM and Model Selection”, Israeli Navigation Workshop, July 2014.
- “Decision Making and Planning in Sparse (Conservative) Belief Space”, the Israeli Association for Automatic Control (IAAC) workshop “Motion Control Methods in Robotics”, November 2015.
- “Towards Robust Autonomous Navigation in Perceptually Aliased GPS-Deprived Environments”, Israeli Navigation Workshop, February 2016.
- “Autonomous Navigation and Perception for Aerial Vehicles”, IBM Research Cognitive Computing Colloquium on Computer Vision and Video Technologies, IBM Haifa Research Lab, November 2016.
- “Vision-Aided Navigation and SLAM - Tutorial”, IAAC workshop on Vision Aided Navigation, January 2019.
- “Autonomous Online Perception and Navigation in Uncertain Environments”, Annual Technion Computer Engineering (TCE) Conference, Autonomous Systems, September 2019.
- “Autonomous Navigation and Perception for Aerial Vehicles”, Israel Robotics Meetup, September 2019.

GUEST LECTURES

- “Advances in autonomous operation in uncertain or unknown environments: distributed robust inference and data association, and planning in generalized belief space”, Department of Computer Science, Technion, 2014
- “Autonomous operation in uncertain and partially unknown large-scale environments: perception, information fusion and planning”, Department of Computer Science, Technion, Ben Gurion and Haifa University; Faculty of Engineering, Bar Ilan University, November 2013.

- “Autonomous navigation in uncertain and partially unknown environments”, Faculty of Aerospace Engineering, Technion, November 2013.
- “Efficient incremental structure from motion and vision-based single- and multi-agent localization”, Computer Science and Electrical Engineering Departments in: Weizmann Institute of Science, Technion, Tel-Aviv University, Bar Ilan University, Hebrew University of Jerusalem, March 2013.
- “Vision-Aided Single- and Multi-Robot Navigation in Unknown Environments”, Faculty of Aerospace Engineering, Technion, March 2013 (Merhav award seminar).
- “Incremental light bundle adjustment for SfM and robotics”, Department of Computer Science, University College London, September 2012.
- “Incremental light bundle adjustment for SfM and multi-robot localization”, Computer Science and Electrical Engineering departments, Technion, May 2012.
- “Graph-Based Cooperative Navigation Based on Three-View Constraints”, Sarnoff/SRI International, Princeton, NJ, January 2012.
- “Graph-Based Cooperative Navigation Based on Three-View Geometry Constraints”, Computer Science and Artificial Intelligence Laboratory (CSAIL), MIT, Cambridge, September 2011.

SIGNIFICANT PROFESSIONAL PROJECTS

- 2013-2014, ARL Micro Autonomous Systems and Technology (MAST)
- 2012, DARPA All Source Positioning Navigation (ASPN)
- 2012-2014, participation in GTSAM (open source library) development and implementation
- 2015-2018, OMEK Consortium (3D sensing/perception)
- 2014-present, founder and head of Autonomous Navigation and Perception Laboratory (ANPL)

PUBLICATIONS

Graduate students are underlined; undergraduate students are double-underlined; other group members (postdocs etc.) are marked with *.

Theses

[1] V. Indelman, “Navigation Performance Enhancement Using Online Mosaicking”, Ph.D. dissertation, Technion - Israel Institute of Technology, April 2011. Advisors: Pini Gurfil, Ehud Rivlin and Hector Rotstein.

Refereed Papers in Professional Journals

Published Papers:

[1] V. Indelman, P. Gurfil, E. Rivlin and H. Rotstein, “Navigation Aiding Based on Coupled Online Mosaicking and Camera Scanning”, Journal of Guidance, Control and Dynamics, 33(6): 1866-1882, 2010.

- [2] V. Indelman, P. Gurfil, E. Rivlin and H. Rotstein, “Real-Time Vision-Aided Localization and Navigation Based on Three-View Geometry”, *IEEE Transactions on Aerospace and Electronic Systems*, 48(3): 2239-2259, 2012.
- [3] V. Indelman, P. Gurfil, E. Rivlin and H. Rotstein, “Distributed Vision-Aided Cooperative Localization and Navigation Based on Three-View Geometry”, *Robotics and Autonomous Systems*, 60(6): 822-840, 2012.
- [4] V. Indelman, P. Gurfil, E. Rivlin and H. Rotstein, “Graph-Based Distributed Cooperative Navigation for a General Multi-Robot Measurement Model”, *International Journal of Robotics Research*, 31(9): 1057-1080, 2012.
- [5] V. Indelman, S. Williams, M. Kaess and F. Dellaert, “Information Fusion in Navigation Systems via Factor Graph Based Incremental Smoothing”, *Robotics and Autonomous Systems*, 96(8): 721-738, 2013.
- [6] S. Williams, V. Indelman, M. Kaess, R. Roberts, J. J. Leonard and F. Dellaert, “Concurrent Filtering and Smoothing: A Parallel Architecture for Real-Time Navigation and Full Smoothing”, *International Journal of Robotics Research*, 33(12): 1544-1568, 2014.
- [7] V. Indelman, L. Carlone and F. Dellaert, “Planning in the Continuous Domain: a Generalized Belief Space Approach for Autonomous Navigation in Unknown Environments”, *International Journal of Robotics Research*, 34(7): 849-882, 2015.
- [8] V. Indelman, R. Roberts and F. Dellaert, “Incremental Light Bundle Adjustment for Structure from Motion and Robotics”, *Robotics and Autonomous Systems*, vol. 70, 63-82, 2015.
- [9] V. Indelman, E. Nelson, J. Dong, N. Michael, and F. Dellaert, “Incremental Distributed Inference from Arbitrary Poses and Unknown Data Association”, *IEEE Control Systems Magazine*, Special Issue on Distributed Control and Estimation for Robotic Vehicle Networks, vol. 36, no. 2, 41-74, 2016.
- [10] V. Indelman, “No Correlations Involved: Decision Making Under Uncertainty in the Conservative Information Space”, *IEEE Robotics and Automation Letters (RA-L)*, vol. 1, no. 1, 407-414, 2016.
- [11] X. Yan, V. Indelman and B. Boots, “Incremental Sparse GP Regression for Continuous-time Trajectory Estimation & Mapping”, *Robotics and Autonomous Systems*, 87:120-132, 2017.
- [12] V. Indelman, “Cooperative Multi-Robot Belief Space Planning for Autonomous Navigation in Unknown Environments”, *Autonomous Robots*, special issue on active perception, 2017.
- [13] D. Kopitkov and V. Indelman, “Computationally Efficient Belief Space Planning via Augmented Matrix Determinant Lemma and Re-Use of Calculations”, *IEEE Robotics and Automation Letters (RA-L)*, 2(2):506-513, 2017.
- [14] T. Regev and V. Indelman, “Decentralized Multi-Robot Belief Space Planning in Unknown Environments via Identification and Efficient Re-Evaluation of Impacted Paths”, *Autonomous Robots*, special issue on Online Decision Making in Multi-Robot Coordination, 42(4): 691-713, 2017.

- [15] D. Kopitkov and V. Indelman, “No Belief Propagation Required: Belief Space Planning in High-Dimensional State Spaces via Factor Graphs, Matrix Determinant Lemma and Re-use of Calculation”, *International Journal of Robotics Research*, 36(10): 1088-1130, 2017.
- [16] S. Pathak*, A. Thomas and V. Indelman, “A Unified Framework for Data Association Aware Belief Space Planning and Perception”, *International Journal of Robotics Research*, 32(2-3): 287-315, 2018.
- [17] M. Chojnacki and V. Indelman, “Vision-based Dynamic Target Trajectory and Ego-motion Estimation Using Incremental Light Bundle Adjustment”, *International Journal of Micro Air Vehicles (SAGE), Special Collection on Estimation and Control for MAV Navigation in GPS-denied Cluttered Environments*, 10(2): 157-170, 2018.
- [18] V. Ovechkin and V. Indelman, “BAFS: Bundle Adjustment with Feature Scale Constraints for Enhanced Estimation Accuracy”, *IEEE Robotics and Automation Letters (RA-L)*, 3(2), April 2018.
- [19] V. Tchuiev and V. Indelman, “Inference over Distribution of Posterior Class Probabilities for Reliable Bayesian Classification and Object-Level Perception”, *IEEE Robotics and Automation Letters (RA-L)*, 3(4): 4329-4336, 2018.
- [20] D. Kopitkov and V. Indelman, “General Purpose Incremental Covariance Update and Efficient Belief Space Planning via Factor-Graph Propagation Action Tree”, *International Journal of Robotics Research*, 38(14): 1644-1673, 2019.
- [21] V. Tchuiev and V. Indelman, “Distributed Consistent Multi-Robot Semantic Localization and Mapping”, *IEEE Robotics and Automation Letters (RA-L)*, accepted.
- [22] Y. Feldman and V. Indelman, “Spatially-Dependent Bayesian Semantic Perception under Model and Localization Uncertainty”, *Autonomous Robots*, accepted.

Submitted Papers:

- [1] E. Farhi and V. Indelman, “Bayesian Incremental Inference Update by Re-using Calculations from Belief Space Planning: A New Paradigm”, *International Journal of Robotics Research*, conditionally accepted (under revision).
Preprint: <https://arxiv.org/pdf/1908.02002.pdf>
- [2] K. Elimelech and V. Indelman, “Efficient Decision Making and Belief Space Planning using Sparse Approximations”, *International Journal of Robotics Research*, conditionally accepted (under revision).
Preprint: <https://arxiv.org/pdf/1909.00885.pdf>
- [3] A. Kitanov* and V. Indelman, “Von Neumann Entropy Induced Efficient Information-theoretic Belief Space Planning”, *International Journal of Robotics Research*, submitted.

Book Chapters

- [1] V. Indelman and F. Dellaert, “Incremental Light Bundle Adjustment: Probabilistic Analysis and Extension to Robotic Navigation”, in edited collection “New Developments in Robot Vision”, *Cognitive Systems Monographs Volume 23*, Springer Berlin Heidelberg, 111-136, 2015.

- [2] E. Nelson, V. Indelman, N. Michael and F. Dellaert, "An Experimental Study of Robust Distributed Multi-Robot Data Association from Arbitrary Poses", in edited collection "Experimental Robotics, the 14th International Symposium on Experimental Robotics", Springer Tracts in Advanced Robotics 109, 323-338, 2016.
- [3] V. Indelman, L. Carlone and F. Dellaert, "Towards Planning in Generalized Belief Space", in edited collection "Robotics Research, The 16th International Symposium ISRR", Springer Tracts in Advanced Robotics 114, 593-609, 2016.
- [4] V. Indelman, "Towards Cooperative Multi-Robot Belief Space Planning in Unknown Environments", Robotics Research, Springer Proceedings, in Advanced Robotics 2, DOI 10.1007/978-3-319-51532-8_27, 2018.
- [5] X. Yan, V. Indelman, B. Boots, "Incremental Sparse GP Regression for Continuous-time Trajectory Estimation & Mapping", Robotics Research, Springer Proceedings, in Advanced Robotics 2, DOI 978-3-319-60916-4_31, 2018.
- [6] K. Elimelech and V. Indelman, "Fast Action Elimination for Efficient Decision Making and Planning Using Revenue Approximation", Robotics Research, Springer Proceedings, in Advanced Robotics 10, DOI 10.1007/978-3-030-28619-4_58, 2020.

Refereed Papers in Conference Proceedings

Published:

- [1] V. Indelman, P. Gurfil, E. Rivlin and H. Rotstein, "Navigation Performance Enhancement Using Rotation and Translation Measurements from Online Mosaicking", AIAA Guidance, Navigation and Control Conference, Hilton Head, SC, USA, August 2007.
- [2] V. Indelman, P. Gurfil, E. Rivlin and H. Rotstein, "Navigation Aiding Using On-Line Mosaicking", IEEE/ION Position Location and Navigation System (PLANS) Conference, California, USA, May 2008.
- [3] V. Indelman, P. Gurfil, E. Rivlin and H. Rotstein, "Navigation Aiding Using Image-Based Relative Motion Measurements", 49th Israel Annual Conference on Aerospace Sciences, Paper No. IACAS49-452, Israel, March 2009.
- [4] V. Indelman, P. Gurfil, E. Rivlin and H. Rotstein, "Real-Time Mosaic-Aided Aerial Navigation: II. Sensor Fusion", AIAA Guidance, Navigation and Control Conference, Chicago, USA, August 2009.
- [5] V. Indelman, P. Gurfil, E. Rivlin and H. Rotstein, "Real-Time Mosaic-Aided Aerial Navigation: I. Motion Estimation", AIAA Guidance, Navigation and Control Conference, Chicago, USA, August 2009.
- [6] V. Indelman, P. Gurfil, E. Rivlin and H. Rotstein, "Mosaic Aided Navigation: Tools, Methods and Results", IEEE/ION Position Location and Navigation System (PLANS) Conference, California, USA, May 2010.

- [7] V. Indelman, P. Gurfil, E. Rivlin and H. Rotstein, "Handling Loop Scenarios for Vision-Aided Aerial Navigation based on Three-View Geometry", 50th Israel Annual Conference on Aerospace Sciences, Paper No. IACAS50-588, Israel, February 2010.
- [8] V. Indelman, P. Gurfil, E. Rivlin and H. Rotstein, "Distributed Vision-Aided Cooperative Localization and Navigation based on Three-View Geometry", Proceedings of the IEEE Aerospace Conference, Montana, USA, March 2011.
- [9] V. Indelman, P. Gurfil, E. Rivlin and H. Rotstein, "Graph-based Distributed Cooperative Navigation", Proceedings of the IEEE International Conference on Robotics and Automation (ICRA), Shanghai, China, May 2011.
- [10] V. Indelman, P. Gurfil, E. Rivlin and H. Rotstein, "Graph-Based Cooperative Navigation Using Three-View Constraints: Method Validation", IEEE/ION Position Location and Navigation System (PLANS) Conference, South Carolina, USA, April 2012.
- [11] V. Indelman, "Bundle Adjustment Without Iterative Structure Estimation and its Application to Navigation", IEEE/ION Position Location and Navigation System (PLANS) Conference, South Carolina, USA, April 2012.
- [12] V. Indelman, S. Williams, M. Kaess and F. Dellaert, "Factor Graph Based Incremental Smoothing in Inertial Navigation Systems", International Conference on Information Fusion, Singapore, July 2012.
- [13] M. Kaess, S. Williams, V. Indelman, R. Roberts, J. J. Leonard and F. Dellaert, "Concurrent Filtering and Smoothing", International Conference on Information Fusion, Singapore, July 2012.
- [14] V. Indelman, R. Roberts, C. Beall and F. Dellaert, "Incremental Light Bundle Adjustment", British Machine Vision Conference, Surrey, UK, September 2012.
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- [16] Y. Feldman and V. Indelman, “Towards Robust Autonomous Semantic Perception”, Workshop on Representing a Complex World: Perception, Inference, and Learning for Joint Semantic, Geometric, and Physical Understanding, in conjunction with IEEE International Conference on Robotics and Automation (ICRA), Brisbane, Australia, May 2018.
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