Roland Bouffanais

Associate Professor – Chair in Computational Diplomacy

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RESEARCH INTERESTS

Complex Systems:	Multi-Agent Systems, Consensus Dynamics & Agent-Based Modeling
Complex Social Systems:	Computational Social Science, Social Contagion & Data Science
Complex Urban Systems:	Human Dynamics, & Big Data Analytics
Artificial Intelligence:	Swarm Intelligence, Machine Learning & Reinforcement Learning
Network Science:	Social Network Analysis, Sensor Networks & Networked Control Systems

EDUCATION

Degree	*Year*	*University*	*Field*
Ph.D.	2007	École Polytechnique Fédérale de Lausanne (EPFL)	Computational Science
M.Sc.	1999	École Normale Supérieure de Lyon (ENS Lyon)	Physics
M.Sc.	1999	Paris Sorbonne University (UPMC)	Physics
'Agrégation'	1998	French higher teaching certificate	Physical Sciences

POSITIONS HELD

Title	Organization	Years
Associate Professor	University of Geneva Faculty of Science & Global Studies Institute	2023–present
Research Affiliate	Massachusetts Institute of Technology (MIT) School of Engineering	2010–present
Associate Professor	University of Ottawa Faculty of Engineering	2020–2023
Associate Professor (with tenure)	Singapore University of Technology and Design Pillar of Engineering	2018–2020
Director of Graduate Studies	Singapore University of Technology and Design Office of Graduate Studies	2018–2020
Assistant Professor	Singapore University of Technology and Design Pillar of Engineering	2011–2018
Research Associate	University of Geneva (UNIGE) Department of Computer Science (CUI), SPC group	2010–2011
Visiting Scholar	École Polytechnique Fédérale de Lausanne (EPFL) School STI, LFMI group	2010–2011
Postdoctoral Fellow	Massachusetts Institute of Technology (MIT) School of Engineering, VFRL group	2008–2010
Research Assistant	École Polytechnique Fédérale de Lausanne (EPFL) School of Engineering	2003–2007
Instructor	National University of Singapore (NUS) NUS double degree program	2001–2003
Instructor	Preparatory Classes for Grandes Écoles (2nd Year) French Ministry of Education	1999–2001

HONORS & AWARDS

2019 Outstanding Paper Award – IEEE Multi-Agent Systems 2019 (Rutgers University NJ, US)
2019 SG Mark (Good Design Award) – Swarm Intelligence ORION, Singapore Design Council
2019 Outstanding Education Award – Singapore University of Technology and Design
2018 NVIDIA Deep Learning Institute (DLI) – Appointed Certified Instructor
2018 Best Paper Award – ASME-IDETC 2018 (Québec QC, Canada)
2018 Invitation to give the Interdisciplinary Lab for Intelligent and Adaptive Systems (ILIAS) Distinguished Lecture (University of Luxembourg)
2018 Peer-Review Award (Top Reviewer Cross-Field) – Web of Science
2015 Visiting Scholar Invitation – CPU Cluster of Excellence, University of Bordeaux
2009 IMACS 2008 Most Successful Papers Award, in *App. Num. Math.*
2008 IBM Research Prize in Computational Sciences: "Exceptional quality in Doctoral thesis work"
2008 Finalist EPFL Best Doctoral Thesis
2007 ERCOFTAC Da Vinci Award: "Best European Doctoral Thesis" (Silver medal)
2007 Swiss National Science Foundation, Prospective Researcher Fellowship
2003 École Polytechnique Fédérale de Lausanne (EPFL), Doctoral School Merit Scholarship
1995-1999 'Ministère de l'Éducation Nationale' Undergraduate and Predoctoral Fellowship (France)

GOVERNMENT & INDUSTRY COLLABORATIONS, CONSULTING

- *Government Agencies & Industry Collaborations:*
  - Ministry of National Development (MND), Singapore
  - Urban Redevelopment Agency (URA), Singapore
  - Ministry of National Defence (Defence Research & Development), Canada
  - Centre for Liveable Cities (CLC), Singapore
  - Housing & Development Board (HDB), Singapore
  - Singapore-MIT Alliance for Research & Technology
  - Agengy for Science, Technology and Research (A*Star), Singapore
  - Airbus Blue Sky department in Ottobrunn, Germany
  - Thales Group: Thales Solutions Pte Ltd, Singapore
  - Thales Group: Thales Digital Solutions, Canada
  - ThinkRF, Kanata Tech Park, ON, Canada
  - BlackBerry QNX, Kanata Tech Park, Canada
  - EDF Lab Singapore: Asian Center for Sustainable Cities
  - DSO National Laboratories, Singapore
- *Consulting Activities:*
  - McKinsey & Co: External Project Consultant
  - Gerson Lehrman Group (GLG): Council Member

EDITORSHIPS & PROFESSIONAL MEMBERSHIPS

- Editorial Board Member *Scientific Reports* (Springer Nature): Category "Networks & Complex Systems"
- Academic Editor *PLOS one* (Public Library of Science): Category "Complex Systems Science, Complexity & Networks"
- Associate Editor for *Royal Society Open Science* (The Royal Society Publishing): Category "Physics", "Systems Science" (2nd term)
- Associate Editor *Frontiers in Robotics and AI* (Frontiers): Category "Multi-Agent Systems"
- Editorial Board Member *Computers & Fluids* (Published by Elsevier)
- Guest Editor Collection on "Active Matter" – *Scientific Reports* (Springer Nature) with Nicole Abaid (Virginia Tech) & Rae Robertson-Anderson (U. of San Diego)
- Guest Associate Editor Collection on "Big Data Networks" – *Frontiers in Big Data* with Pascal Bouvry (University of Luxembourg) & Grégoire Danois (University of Luxembourg)
- Complex Systems Society (CSS): Member & Awards Committee Member
- Area Editor/Chair for IEEE ICRA (MAS) 2021–2024, IEEE IROS (Intelligent Robots & Systems) 2020–2022, IEEE MRS (Multi-agent Systems) 2019
- American Association for the Advancement of Science (AAAS): Member #40748994
- American Physical Society: Member #61018767

PATENTS & TECHNOLOGY DISCLOSURES

- Full Patent Application – WIPO-PCT – Application No. PCT/SG2020/0502242 – Title: "Climbing Robot' (filed Oct 2020) [pdf]
- U.S. Full Patent US10705012B2 [web], [pdf]
  - Previously: U.S. Provisional Patent No. 62/151,530 & PCT Patent No. PCT/SG2016/05091
  - Title: "Device and Method for Analyzing Cell Motility" (filed Nov 2017)

TEACHING

University of Ottawa – Undergraduate & Graduate Courses

Year 3	Instructor: MCG 3706 – System Dynamics (Fall 2021–2022)
Year 4	Instructor: MCG 4136 – Engineering Systems (Winter 2021–2023)
Graduate	Instructor: MCG 5184 – Engineering Systems (Winter 2022–2023)

Singapore University of Technology and Design (SUTD) – Undergraduate & Graduate Courses

Ph.D. Course	Course Lead: 30.504 – Computational Science & Engineering (Spring 2015–2017)
UG Term 5	Instructor: 30.101 – Systems & Control (Spring 2018–2020)
UG Term 5	Course Lead: 30.103 – Fluid Mechanics (Spring 2014–2020)
UG Term 3	Instructor: 10.008 – Engineering in the Physical World (Spring 2014)
UG Term 3	Course Lead: 10.008 – Engineering in the Physical World (Spring 2013)

École Polytechnique Fédérale de Lausanne (EPFL) – Graduate Course

Fall 2010	Co-lecturer: Instability and Turbulence (jointly taught with Prof. François Gallaire)

École Polytechnique Fédérale de Lausanne (EPFL) – Undergraduate Courses

Fall 2003–2006	Teaching Assistant: Incompressible Fluid Mechanics
Spring 2005–2006	Teaching Assistant: Continuum Mechanics
Spring 2004–2006	Teaching Assistant: Hydrodynamics

National University of Singapore (NUS)

Fall 2001–2002	Instructor: bachelor level, double degree program with French "Grandes Écoles"
Spring 2001–2003	Instructor: Faculty of Engineering and Science (Mathematics & Physics)

Classes Préparatoires aux Grandes Écoles (CPGE) – 2ème Année

1999–2001	Professeur agrégé en 2ème année (Physique & Informatique)

SCHOLARLY ACCOMPLISHMENTS

Summary of Publications

Total of 151 publications – Citations: Google Scholar

- 2 books
- 5 book chapters
- 86 refereed journal articles
- 40 refereed conference proceedings and patents (including several highly selective A*/A international conferences)
- 18 opinion editorials

Interdisciplinary Publications Organized By Theme

The full list of publications below is classically presented in reverse chronological order.
Given the interdisciplinary nature of these works, we propose a thematic index on next page (some publications appear under multiple labels).

Complex Systems

- *Multi-Agent Systems*
  - Swarm Intelligence & Agent-Based Modeling ..... [1], [5], [10], [11], [14], [17], [20], [34], [42], [43], [48], [49], [54], [59], [65], [66], [72], [101], [105], [108], [115], [120], [121]
  - Consensus Dynamics ..... [1], [15], [16], [26], [29], [31], [42], [65], [66]
  - Networked Control Systems & Distributed Optimization [9], [10] [23], [25], [72], [96], [107], [109], [112], [113], [123-125], [129]
  - AI & Reinforcement Learning ..... [9], [11], [19], [32], [36], [41], [95], [106], [119]
- *Computational Social Science*
  - Collective Decision-Making & Collective Learning ..... [5], [16], [31], [48], [54], [59], [99], [101], [102]
  - Social Contagion ..... [16], [31], [33], [48], [59], [101], [137], [141]
  - Social Networks ..... [22], [27], [31], [40], [54], [135], [142]
  - AI & Data Science ..... [19], [22], [27], [33], [40], [99], [101], [136], [145], [149]
- *Complex Urban Systems*
  - Sensor Network Analysis ..... [3], [4], [8], [12], [18], [25], [28], [97], [104], [148], [150]
  - Human Dynamics ..... [8], [12], [17], [25], [27], [28], [98], [103], [144], [147]
  - AI & Big Data Analytics ..... [3], [4], [11], [18], [27], [100], [103], [117], [138-141]

Computational Science (others)

- *Nonlinear Systems* ..... [6], [7], [13], [21], [24], [31], [37-39], [44-47], [50-53], [55-58], [60], [62-64], [67-71], [73-93], [126], [129-133]

Books

[1] *Design and Control of Swarm Dynamics*
R. Bouffanais, Springer, Complexity Series ISBN 978-9812877505, 118 pages, DOI: 10.1007/978-981-287-751-2 (2016). [web], [pdf]

[2] *Thermodynamique*
R. Bouffanais, Prepamath Edition (In French), ISBN 2–910350–30–4, 192 pages (1999). [web], [pdf]

Book Chapters

[3] *Artificial Intelligence in Urban Planning and Design*
A. D. S. Srikanth, W. C. B. Chin, R. Bouffanais, T. Schroepfer, Chapter 3: Complexity Science for Urban Solutions (Eds. I. As and P. Basu and P. Talwar), Elsevier, Pages 39–58, Print ISBN: 978-0-12-823941-4, DOI: 10.1016/B978-0-12-823941-4.00017-2 (2022). [pdf]

[4] *Artificial Intelligence in Urban Planning and Design*
A. D. S. Srikanth, W. C. B. Chin, R. Bouffanais, T. Schroepfer, Chapter 12: Complexity Science-based Spatial Performance Analyses of UNStudio/DP Architects' SUTD Campus and WOHA's Kampung Admiralty (Eds. I. As and P. Basu and P. Talwar), Elsevier, Pages 217–244, Print ISBN: 978-0-12-823941-4, DOI: 10.1016/B978-0-12-823941-4.00019-6 (2022). [pdf]

[5] *Complex Systems: Theory and Applications*
D. Mateo & R. Bouffanais, Chapter 18: Excess of social activity reduces the responsiveness of swarms (Eds. G. Rzveski and C.A. Brebbia), WIT Press, Pages 172–180, Print ISBN: 978-1-78466-235-6, eBook ISBN: 978-1-78466-236-3 (2017). [web], [pdf]

[6] *Graphene Science Handbook Nanostructure and Atomic Arrangement*
M. B. Belonenko, N. N. Konobeeva, A. V. Zhukov & R. Bouffanais, Chapter 22: Tunneling current of

the contact of the curved graphene nanoribbon with metal and quantum dots (Eds. M. Aliofkhazraei, N. Ali, W. I. Milne, C. S. Ozkan, S. Mitura, and J. L. Gervasoni), CRC Press, Pages 327–339, Print ISBN: 978-1-4665-9137-0, eBook ISBN: 978-1-4665-9138-7, DOI: 10.1201/b19461 (2016). [pdf]

[7] *High-Performance Computing of Industrial Flows*
R. Bouffanais, N. Fiétier, J. Lätt, M. O. Deville, Chapter 7: High performance computing with spectral element methods. In VKI Lecture Series (Eds. J.-M. Buchlin, P. Rambaud, Ph. Planquart), ISBN 978–2–930389–93–1, von Kármán Institute for Fluid Dynamics (2009). [web], [pdf]

Refereed Journal Articles

[8] Effects of the interplay between topology and function of an integrated urban development on patterns of user movement
A. Mannivannan, W. C. B. Chin, S. Gopalakrishnan, D. Wong, T. Schroepfer, R. Bouffanais, *Scientific Reports*, **(14)**, 7021, DOI: 10.1038/s41598-024-57475-3 (2024). [pdf]

[9] A Sequential Deep Learning Algorithm for Sampled Mixed-integer Optimisation Problems
M. Chamanbaz & R. Bouffanais, *Information Sciences*, **(634)**, 73–84, DOI: 10.1016/j.ins.2023.03.061 (2023). [pdf]

[10] Effect of Swarm Density on Collective Tracking Performance
H. L. Kwa, J. Philippot & R. Bouffanais, *Swarm Intelligence*, **(17)**, 253–281, DOI: 10.1007/s11721-023-00225-4 (2023). [pdf]

[11] Adaptivity: A Path Towards General Swarm Intelligence?
H. L. Kwa, J. L. Kit, N. Horsevad, J. Philippot, M. Savari & R. Bouffanais, *Frontiers in Robotics and AI*, **(10)**, 1163185, DOI: 10.3389/frobt.2023.1163185 (2023). [pdf]

[12] Vertical Cities: Emergent Patterns of Movement and Space Use in Dense Vertically Integrated Urban Built Environments
S. Gopalakrishnan, D. Wong, B. Chin, A. D. Srikanth, A. Mannivannan, R. Bouffanais, T. Schroepfer, *Int. J. on Smart and Sustainable Cities*, **(1)**, 23400005, DOI: 10.1142/S2972426023400056 (2023). [pdf]

[13] Extremely Short 3D Bessel Pulses in an Optically Anisotropic Photonic Crystal Made from CNTs with Account for Nonlinear Absorption and Pumping
A. V. Zhukov, R. Bouffanais, I. S. Dvuzhilov & Y. V. Dvuzhilova & M. B. Belonenko, *Appl. Phys. B*, **(129)**, 105, DOI: 10.1007/s00340-023-08055-2 (2023). [pdf]

[14] Controllability of a Class of Swarm Signaling Networks
P. Sun, R.E. Kooij & R. Bouffanais, *J. Complex Networks*, **(10)**:6, cnac054, DOI: 10.1093/comnet/cnac054 (2022). [pdf]

[15] Adapting the Exploration-Exploitation Balance in Heterogeneous Swarms: Tracking Evasive Targets
H. L. Kwa, V. Babineau, J. Philippot & R. Bouffanais, *Artificial Life*, **(29)**, 1–16, DOI: 10.1162/artl_a_00390 (2022). [pdf]

[16] Transition from Simple to Complex Contagion in Collective Decision-Making
N. Horsevad, D. Mateo, R.E. Kooij, A. Barrat & R. Bouffanais, *Nature Communications*, **(13)**, 1442, DOI: 10.1038/s41467-022-28958-6 (2022). [pdf]

[17] Beyond Bio-Inspired Robotics: How Multi-Robot Systems Can Support Research on Collective Behavior
N. Horsevad, H. L. Kwa R. Bouffanais, *Frontiers in Robotics and AI*, **(9)**, 865414, DOI: 10.3389/frobt.2022.865414 (2022). [pdf]

[18] A Framework for the Identification of Human Vertical Displacement Activity Based on Multi-Sensor Data
A. Manivannan, E. J. Willemse, Balamurali B. T., W. C. B. Chin, Y. Zhou, B. Tunçer, A. Barrat & R. Bouffanais, *IEEE Sensors J.*, **(22)**:8, 8011–8029, DOI: 10.1109/JSEN.2022.3157806 (2022). [pdf]

[19] 'Data dregs' and its Implications for AI Ethics: Revelations From the Pandemic
S. S. Lim & R. Bouffanais, *AI and Ethics* (Springer), **(2)**, 595–597, DOI: 10.1007/s43681-021-00130-8 (2022). [pdf]

[20] Balancing Collective Exploration and Exploitation in Multi-Agent and Multi-Robot Systems: A Review
H. L. Kwa, J. L. Kit & R. Bouffanais, *Frontiers in Robotics and AI*, **(8)**, 771520, DOI: 10.3389/frobt.2021.771520 (2022). [pdf]

[21] Entropy Changes in Crystalline Material Under Phase Transition and Symmetry Breaking
D. Sinha & R. Bouffanais, *Physica A: Statistical Mechanics and Its Applications*, **(588)**, 126525, DOI: 10.1016/j.physa.2021.126525 (2022). [pdf]

[22] Interplay Between Success and Patterns of Human Collaboration: Case Study of a Thai Research Institute
A. M. Fiscarelli, M. R. Brust, R. Bouffanais, A. Piyatumrong, G. Danois & P. Bouvry, *Scientific Reports*, **(11)**, 318, DOI: 10.1038/s41598-020-79447-z (2021). [pdf]

[23] Tuning the Clustering Coefficient of Generalized Circulant Networks
R. E. Kooij, N. Horsevad & R. Bouffanais, *Physica A: Statistical Mechanics and Its Applications*, **(578)**, 126088, DOI: 10.1016/j.physa.2021.126088 (2021). [pdf]

[24] External Light Control of Three-dimensional Pulses in an Array of Carbon Nanotubes
E. G. Fedorov, A. V. Zhukov, R. Bouffanais, N. N. Konobeeva, E. V. Boroznina, B. A. Malomed, H. Leblond, D. Mihalache, M. B. Belonenko, N. N. Rosanov & T. F. George, *Phys. Rev. B*, **(103)**, 085111, DOI: 10.1103/PhysRevB.103.085111 (2021). [pdf]

[25] Cities – Try to Predict Superspreading Hotspots for COVID-19
R. Bouffanais & S. S. Lim, *Nature*, **(583)**, 352–355, DOI: 10.1038/d41586-020-02072-3 (2020). [pdf]

[26] Randomized Constraints Consensus for Distributed Robust Mixed-Integer Programming
M. Chamanbaz, G. Notarstefano, F. Sasso & R. Bouffanais, *IEEE Trans. Control Network Systems*, **(8)**, 295–306, DOI: 10.1109/TCNS.2020.3024483 (2020). [pdf]

[27] Spatial Super-spreaders and Super-susceptibles in Human Movement Networks
W. C. B. Chin & R. Bouffanais, *Scientific Reports*, **(10)**, 18642, DOI: 10.1038/s41598-020-75697-z (2020). [pdf]

[28] On the Challenges and Potential of Using Barometric Sensors to Track Human Activity
A. Manivannan, W. C. B. Chin, A. Barrat & R. Bouffanais, *Sensors*, **(20)**, 6786, DOI: 10.3390/s20236786 (2020). [pdf]

[29] Robust Stabilization of a Class of Nonlinear Systems via Aperiodic Sensing and Actuation
N. S. Tripathy, I. N. Kar, M. Chamanbaz & R. Bouffanais, *IEEE Access*, **(8)**, 157403, DOI: 10.1109/ACCESS.2020.3018733 (2020). [pdf]

[30] Viscoelastic Laminar Drag Bounds in Pipe Flow
M. Malik, R. Bouffanais & M. Skote, *Phys. Fluids*, **(32)**, 031702, DOI: 10.1063/5.0002122 (2020). [pdf]

[31] Optimal Network Topology for Responsive Collective Behavior
D. Mateo, N. Horsevad, V. Hassani, M. Chamanbaz & R. Bouffanais, *Science Advances*, **(5)**:eaau0999, DOI: 10.1126/sciadv.aau099 (2019). [pdf]

[32] Self-Organizing Maps for Storage and Transfer of Knowledge in Reinforcement Learning
T. G. Karimpanal & R. Bouffanais, *Adaptive Behavior*, **(27)**:2, 111–126, DOI: 10.1177/1059712318818568 (2019). [pdf]

[33] From Senseless Swarms to Smart Mobs: Tuning Networks for Prosocial Behavior
S. S. Lim & R. Bouffanais, *IEEE Technology and Society Magazine*, **(38)**:4, 17–19, DOI: 10.1109/MTS.2019.2948437 (2019). [pdf]

[34] Design Innovation of Mesoscale Robotic Swarms: Applications to Cooperative Urban Sensing and Mapping
A. G. Dharmawan, G. S. Soh, S. Foong, R. Bouffanais & K. L. Wood, *Front. Inform. Technol. Electron. Eng.*, **(20)**, 1618–1631, DOI: 10.1631/FITEE.1900384 (2019). [pdf]

[35] Design, Modeling and Experimentation of a Bio-Inspired Miniature Climbing Robot with Bilayer Dry Adhesives
A. G. Dharmawan, P. Xavier, H. H. Hariri, G. S. Soh, A. Baji, R. Bouffanais S. Foong, H. Y. Low & K. L. Wood, *J. Mech. Rob.*, **(11)**:2, 020902, DOI: 10.1115/1.4042457 (2019). [pdf]

[36] Data Assimilation Method to De-noise and De-filter PIV Data
J. J. J. Gillissen, R. Bouffanais & D. K. P. Yue, *J. Fluid Mech.*, **(877)**, 196–213, DOI: 10.1017/jfm.2019.602 (2019). [pdf]

[37] Hydrodynamic Object Identification using Artificial Neural Networks
S. Lakkam, B. T. Balamurali, R. Bouffanais, *Scientific Reports*, **(9)**, 11242, DOI: 10.1038/s41598-019-47747-8 (2019). [pdf]

[38] Stabilization of Ultrashort Pulses by External Pumping in an Array of Carbon Nanotubes Subject to Piezoelectric Effects
N. N. Konobeeva, E. G. Fedorov, N. N. Rosanov, A. V. Zhukov, R. Bouffanais & M. B. Belonenko, *J. Appl. Phys.*, **(126)**, 203103, DOI: 10.1063/1.5128365 (2019). [pdf]

[39] Asymptotic Dynamics of Three-dimensional Bipolar Ultrashort Electromagnetic Pulses in an Array of Semiconductor Carbon Nanotubes
E. G. Fedorov, A. V. Zhukov, R. Bouffanais, B. A. Malomed, H. Leblond, D. Mihalache, N. N. Rosanov & M. B. Belonenko, *Opt. Exp.*, **(27)**, 27592, DOI: 10.1364/OE.27.027592 (2019). [pdf]

[40] Are the Different Layers of a Social Network Conveying the Same Information?
A. Manivannan, W. Q. Yow, R. Bouffanais & A. Barrat, *EPJ Data Science*, **(7)**, 34, DOI: 10.1140/epjds/s13688-018-0161-9 (2018). [pdf]

[41] Experience Replay Using Transition Sequences
T. G. Karimpanal & R. Bouffanais, *Frontiers in Neurorobotics*, **(12)**, 32, DOI: 10.3389/fnbot.2018.00032 (2018). [pdf]

[42] Consensus in Networked Multiagent Systems under Communication Constraints and Dynamically Changing Topologies
M. Komareji, Y. Shang & R. Bouffanais, *Nonlinear Dynamics*, **(93)**, 1287–1300, DOI: 10.1007/s11071-018-4259-1 (2018). [pdf]

[43] Distributed System of Autonomous Buoys for Scalable Deployment and Monitoring of Large Waterbodies
B. M. Zoss, D. Mateo, Y. K. Kuan, G. Tokić, M. Chamanbaz, L. Goh, F. Vallegra, R. Bouffanais, & Dick K. P. Yue, *Autonomous Robots*, **(42)**, 1669–1689, DOI: 10.1007/s10514-018-9702-0 (2018). [pdf]

[44] A Space-Time Integral Minimization Method for Reconstructing Velocity Fields from Scalar Fields
J. J. J. Gillissen, A. Vilquin, H. Kellay, R. Bouffanais & D. K. P. Yue, *J. Fluid Mech.*, **(854)**, 348–366, DOI: 10.1017/jfm.2018.559 (2018). [pdf]

[45] Growth Mechanisms of Perturbations in Boundary Layers over a Compliant Wall
M. Malik, M. Skote & R. Bouffanais, *Phys. Rev. Fluids*, **(3)**, 013903, DOI: 10.1103/PhysRevFluids.3.013903 (2018). [pdf]

[46] Propagation of Three-dimensional Bipolar Ultrashort Electromagnetic Pulses in an Inhomogeneous Array of Carbon Nanotubes
E. G. Fedorov, A. V. Zhukov, R. Bouffanais, A. P. Timashkov, B. A. Malomed, H. Leblond, D. Mihalache, N. N. Rosanov & M. B. Belonenko, *Phys. Rev. A*, **(97)**, 043814, DOI: 10.1103/PhysRevA.97.043814 (2018). [pdf]

[47] Two-dimensional Electroacoustic Waves in Silicene
A. V. Zhukov, R. Bouffanais, N. N. Konobeeva & M. B. Belonenko, *Appl. Phys. B*, **(124)**, 10, DOI: 10.1007/s00340-017-6879-4 (2018). [pdf]

[48] Effect of Correlations in Swarms on Collective Response
D. Mateo, Y. K. Kuan & R. Bouffanais, *Scientific Reports*, **(7)**, 10388 DOI: 10.1038/s41598-017-09830-w (2017). [pdf]

[49] Swarm-Enabling Technology for Multi-Robot Systems
M. Chamanbaz, D. Mateo, B. M. Zoss, G. Tokić, E. Wilhelm, R. Bouffanais & Dick K. P. Yue, *Frontiers in Robotics and AI* (Multi-Robot Systems Section) **(4)**, 0012, DOI: 10.3389/frobt.2017.00012 (2017). [pdf]

[50] Nonequilibrium Dielectric Noise in Solids in the Presence of Modulation of Electrical Permittivity and Spectral Symmetry Breaking Under Feedback
D. Sinha, R. Bouffanais & S. Huang, *New J. Phys.*, **(19)**, 113050, DOI: 10.1088/1367-2630/aa8ff1 (2017). [pdf]

[51] Three-dimensional Light Bullets in a Bragg Medium with Carbon Nanotubes
A. V. Zhukov, R. Bouffanais, M. B. Belonenko, I. S. Dvuzhilov & Y. V. Nevzorova, *Appl. Phys. B*, **(123)**, 196, DOI: 10.1007/s00340-017-6767-y (2017). [pdf]

[52] Influence of the Order Parameter on the Dynamics of Ultrashort Pulses in an Environment with Carbon Nanotubes
A. V. Zhukov, R. Bouffanais, N. N. Konobeeva & M. B. Belonenko, *J. Appl. Phys.* **(121)**, 084301, DOI: 10.1063/1.4977011 (2017). [pdf]

[53] Three-dimensional Ultrashort Optical Airy Beams in an Inhomogeneous Medium with Carbon Nanotubes
A. V. Zhukov, R. Bouffanais, M. B. Belonenko & I. S. Dvuzhilov, *Phys. Lett. A* **(381)**, 931, DOI: 10.1016/j.physleta.2017.01.008 (2017). [pdf]

[54] Interplay Between Signaling Network Design and Swarm Dynamics
A. Sekunda, M. Komareji & R. Bouffanais, *Network Science* **(4)**, 244–265, DOI: 10.1017/nws.2016.5 (2016). [pdf]

[55] Opto-acoustics Effects in an Array of Carbon Nanotubes
A. V. Zhukov, R. Bouffanais, N. N. Konobeeva & M. B. Belonenko, *J. Appl. Phys.* **(120)**, 134307, DOI: 10.1063/1.4964445 (2016). [pdf]

[56] Peculiarities of the Propagation of Multidimensional Extremely Short Optical Pulses in Germanene
A. V. Zhukov, R. Bouffanais, N. N. Konobeeva & M. B. Belonenko, *Phys. Lett. A* **(380)**, 3117–3120, DOI: 10.1016/j.physleta.2016.07.021 (2016). [pdf]

[57] Zitterbewegung near a Schwarzschild-type Black Hole
A. V. Zhukov, R. Bouffanais, N. N. Konobeeva & M. B. Belonenko, *Mod. Phys. Lett. A* **(31)**, 1650168, DOI: 10.1142/S0217732316501686 (2016). [pdf]

[58] Three-dimensional Extremely-short Optical Pulses in Carbon Nanotube Arrays in the Presence of an External Magnetic Field
A. V. Zhukov, R. Bouffanais, M. B. Belonenko & E. N. Galkina, *Mod. Phys. Lett. B* **(30)**, 1650405, DOI: 10.1142/S0217984916504054 (2016). [pdf]

[59] Excess of Social Activity Reduces the Responsiveness of Swarms
D. Mateo & R. Bouffanais, *Int. J. Des. Nat. Ecodyn.* **(11)**, 654–662, DOI: 10.2495/DNE-V11-N4-654-662 (2016). [pdf]

[60] Collisions of Three-dimensional Bipolar Optical Solitons in an Array of Carbon Nanotubes
A. V. Zhukov, R. Bouffanais, B. A. Malomed, H. Leblond, D. Mihalache, E. G. Fedorov, N. N. Rosanov & M. B. Belonenko, *Phys. Rev. A* **(94)**, 053823, DOI: 10.1103/PhysRevA.94.053823 (2016). [pdf]

[61] Interplay Between Motility and Cell-Substratum Adhesion in Amoeboid Cells
X. Zhu, R. Bouffanais & D. K. P. Yue, *Biomicrofluidics* **(9)**, 054112, DOI: 10.1063/1.4931762 (2015). [pdf]

[62] Interaction of a Two-dimensional Electromagnetic Pulse with an Electron Inhomogeneity in an Array of Carbon Nanotubes in the Presence of Field Inhomogeneity
A. V. Zhukov, R. Bouffanais, H. Leblond, D. Mihalache, E. G. Fedorov & M. B. Belonenko, *Eur. Phys. J. D* **(69)**, 242, DOI: 10.1140/epjd/e2015-60256-7 (2015). [pdf]

[63] Study of the Indirect Interaction in a Non-Fermi Liquid within the AdS/CFT Correspondence Framework
A. V. Zhukov, R. Bouffanais, A. V. Pak & M. B. Belonenko, *Mod. Phys. Lett. B* **(29)**, 1550181, DOI: 10.1142/S0217984915500815 (2015). [pdf]

[64] Two-dimensional Extremely Short Electromagnetic Pulses in a Bragg Medium with Carbon Nanotubes
A. V. Zhukov, R. Bouffanais, M. B. Belonenko, N. N. Konobeeva, Y. V. Nevzorova & T. F. George, *Eur. Phys. J. D* **(69)**, 129, DOI: 10.1140/epjd/e2015-50895-y (2015). [pdf]

[65] Consensus Reaching in Swarms Ruled by a Hybrid Metric-Topological Distance
Y. Shang & R. Bouffanais, *Eur. Phys. J. B* **(87)**, 294 DOI: 10.1140/epjb/e2014-50094-4 (2014). [pdf]

[66] Influence of the Number of Topologically Interacting Neighbors on Swarm Dynamics
Y. Shang & R. Bouffanais, *Scientific Reports* **(4)**, 04184, DOI: 10.1038/srep04184 (2014). [pdf]

[67] Interaction of a Two-dimensional Electromagnetic Breather with an Electron Inhomogeneity in an Array of Carbon Nanotubes
A. V. Zhukov, R. Bouffanais, E. G. Fedorov & M. B. Belonenko, *J. App. Phys.* **(115)**, 203109, DOI: 10.1063/1.487990 (2014). [pdf]

[68] Influence of Multi-level Impurities on the Dynamics of Ultrashort Electromagnetic Pulses in Carbon Nanotubes
A. V. Zhukov, R. Bouffanais, N. N. Konobeeva, M. B. Belonenko & T. F. George, *Europhys. Lett.* **(106)**, 37005, DOI: 10.1209/0295-5075/106/37005 (2014). [pdf]

[69] Persistent Cellular Motion Control and Trapping Using Mechanotactic Signaling
X. Zhu, R. Bouffanais & D. K. P. Yue, *PLoS one* **(9)**, e105406, DOI: 10.1371/journal.pone.0105406 (2014). [pdf]

[70] Few-cycle Optical Pulses in a Thin Film of a Topological Insulator
A. V. Zhukov, R. Bouffanais, M. B. Belonenko, N. N. Konobeeva & T. F. George, *Opt. Commun.* **(329)**, 151–153, DOI: 10.1016/j.optcom.2014.05.018 (2014). [pdf]

[71] Tunneling Characteristics of a Contact Between a Superlattice and non-Fermi Liquid using the AdS/CFT Correspondence
M. B. Belonenko, N. N. Konobeeva, D. M. Smovzh, A. V. Zhukov & R. Bouffanais, *Mod. Phys. Lett. B* **(28)**, 1450170, DOI: 10.1142/S021798491450170X (2014). [pdf]

[72] Resilience and Controllability of Dynamic Collective Behaviors
M. Komareji & R. Bouffanais, *PLoS one* **(8)**, e82578, DOI: 10.1371/journal.pone.0082578 (2013). [pdf]

[73] Three-dimensional Electromagnetic Breathers in Carbon Nanotubes with the Field Inhomogeneity Along their Axes

A. V. Zhukov, R. Bouffanais, E. G. Fedorov & M. B. Belonenko, *J. Appl. Phys.* **(114)**, 143106 DOI: 10.1063/1.482437 (2013). [pdf]

[74] On the Electronic Spectrum in Curved Graphene Nanoribbons
A. V. Zhukov, R. Bouffanais, N. N. Konobeeva & M. B. Belonenko, *JETP Lett.* **(97)**, 400–403, DOI: 10.1134/S0021364013070126 (2013). [pdf]

[75] Study of the Indirect Exchange Interaction in a Strained Graphene Nanoribbon
A. V. Zhukov, R. Bouffanais, A. V. Pak & M. B. Belonenko, *Physica B* **(419)**, 62–65, DOI: 10.1016/j.physb.2013.03.022 (2013). [pdf]

[76] Propagation of Extremely Short Pulses in a Graphene-Boron Nitride Bilayer
A. V. Zhukov, R. Bouffanais, A. V. Pak & M. B. Belonenko, *Phys. Lett. A* **(377)**, 564–566, DOI: 10.1016/j.physleta.2012.12.027 (2013). [pdf]

[77] Physical Limits on Cellular Directional Mechanosensing
R. Bouffanais, J. Sun & D. K. P. Yue, *Phys. Rev. E* **(87)**, 052716, DOI: 10.1103/PhysRevE.87.052716 (2013). [pdf]

[78] Computational Fluid Dynamics for Architectural Design
S. Kaijima, R. Bouffanais, S. Naidu & K. Willcox, *Architectural Design* **(83)**, Issue 2, 118–123, DOI: 10.1002/ad.1566 (2013). [pdf]

[79] Propagation of Laser Beams in an Array of Semiconductor Carbon Nanotubes
A. V. Zhukov, R. Bouffanais, M. B. Belonenko & E. G. Fedorov, *Mod. Phys. Lett. B* **(27)**, 1350045, DOI: 10.1142/S0217984913500450 (2013). [pdf]

[80] The Hall Conductivity of a Doped Graphene in a Quantizing Magnetic Field
M. B. Belonenko, A. V. Pak, A. V. Zhukov & R. Bouffanais, *Mod. Phys. Lett. B* **(26)**, 125088, DOI: 10.1142/S0217984912501886 (2012). [pdf]

[81] Hydrodynamic Object Recognition Using Pressure Sensing
R. Bouffanais, G. D. Weymouth & D. K. P. Yue, *Proc. Roy. Soc. A* **(467)**, 19–38, DOI: 10.1098/rspa.2010.0095 (2011). [pdf]

[82] Time-Scale Joint Representation of DNS and LES Numerical Data
G. Courbebaisse, R. Bouffanais, L. Navarro, E. Leriche & M. O. Deville, *Computers & Fluids* **(43)**, 38–45, DOI: 10.1016/j.compfluid.2010.09.004 (2011). [pdf]

[83] Computational Performance of a Parallelized Three-dimensional High-order Spectral Element Toolbox
C. Bosshard, R. Bouffanais, M. O. Deville, R. Gruber & J. Lätt, *Computers & Fluids* **(44)**, 1–8, DOI: 10.1016/j.compfluid.2010.11.014 (2011). [pdf]

[84] Hydrodynamics of Cell-Cell Mechanical Signaling in the Initial Stages of Aggregation
R. Bouffanais & D. K. P. Yue, *Phys. Rev. E* **(81)**, 041920, DOI: 10.1103/PhysRevE.81.041920 (2010). [pdf].

[85] Advances and Challenges of Applied Large-Eddy Simulation
R. Bouffanais, *Computers & Fluids* **(39)**, 735–738, DOI: 10.1016/j.compfluid.2009.12.003 (2010). [pdf]

[86] Unsteady Transitional Swirling Flow in the Presence of a Moving Free Surface
R. Bouffanais & D. Lo Jacono, *Phys. Fluids* **(21)**, 064107, DOI: 10.1063/1.3156010 (2009). [pdf]

[87] Transitional Cylindrical Swirling Flow in Presence of a Flat Free Surface
R. Bouffanais & D. Lo Jacono, *Computers & Fluids* **(38)**, 1651–1673, DOI: 10.1016/j.compfluid.2009.02.002 (2009). [pdf]

[88] Solution of Moving Boundary Problems by the Spectral Element Method
N. Bodard, R. Bouffanais & M. O. Deville, *App. Num. Math.* **(58)**, 968–984, DOI: 10.1016/j.apnum.2007.04.009 (2008). [pdf]

[89] A Coupled Approximate Deconvolution and Dynamic Mixed Scale Model for Large-Eddy Simulation
M. A. Habisreutinger, R. Bouffanais, E. Leriche & M. O. Deville, *J. Comput. Phys.* **(224)**, 241–266, DOI: 10.1016/j.jcp.2007.02.010 (2007). [pdf]

[90] Large-Eddy Simulation of the Flow in a Lid-Driven Cubical Cavity
R. Bouffanais, M. O. Deville & E. Leriche, *Phys. Fluids.* **(19)**, 055108, DOI: 10.1063/1.2723153 (2007). [pdf]

[91] Mesh Update Techniques for Free-Surface Flow Solvers using Spectral Element Method
R. Bouffanais & M. O. Deville, *J. Sci. Comput.* **(27)**, 137–149, DOI: 10.1007/s10915-005-9050-z (2006). [pdf]

[92] Large-Eddy Simulation of the Lid-Driven Cubic Cavity Flow by the Spectral Element Method
R. Bouffanais, M. O. Deville, P. F. Fischer, E. Leriche & D. Weill, *J. Sci. Comput.* **(27)**, 151–162, DOI: 10.1007/s10915-005-9039-7 (2006). [pdf]

[93] Nonequilibrium Electron Interactions in Metal Films
N. Del Fatti, R. Bouffanais, F. Vallée & C. Flytzanis, *Phys. Rev. Lett.* **(81)**, 922–925, DOI: 10.1103/PhysRevLett.81.922 (1998). [pdf]

Refereed Conference Proceedings & Patents

[94] The Impact of Agent Density and Environmental Factors on Target Tracking Swarms
H. L. Kwa, J. Philippot & R. Bouffanais, *Proceedings of the ALIFE 2023: The 2023 Conference on Artificial Life*, July 24-28, 2023, Sapporo, Japan, Accepted for Publication, pp. XX–XX, ASME, (2023).

[95] Multi-Target Pursuit by a Decentralized Heterogeneous UAV Swarm using Deep Multi-Agent Reinforcement Learning
M. Kouzehgar, Y. Song, M. Meghjani & R. Bouffanais, *ICRA 2023, IEEE International Conference on Robotics and Automation*, May 29-June 2, 2023, London, UK, Accepted for Publication, (2023). [pdf]

[96] Finite-time Event-triggered Control for a Class of Nonlinear Systems
N. S. Tripathy, M. Chamanbaz & R. Bouffanais, *CDC 2022, 61st IEEE Conf. Decision Control*, December 6-9, 2022, Cancún, Mexico, pp. 545–551, DOI: 10.1109/CDC51059.2022.9992884 (2022). [pdf]

[97] Connect or Adapt: Analytic Framework for the Planning and Design of Resilient Spatial Networks
D. Wong, W. C. B. Chin, R. Bouffanais & T. Schroepfer, *Proceedings of the International Conference ARCC-EAAE 2022*, pp. 225–233, March 2–5, Miami, FL, USA, (2022). [web], [pdf]

[98] Evaluation of Spatial Performance in Vertically Integrated Developments Using a Network Science-Based Approach
S. Golapakrishnan, C. Hablani, D. Wong, A. D. Srikanth, A. Manivannan, R. Bouffanais & T. Schroepfer, *Proceedings of the International Conference ARCC-EAAE 2022*, pp. 391–398, March 2–5, Miami, FL, USA, (2022). [web], [pdf]

[99] The Effect of Network Connectivity on Exploration and Exploitation During Decentralized Collective Learning
H. L. Kwa & R. Bouffanais, *4th International Workshop on Agent-Based Modelling of Human Behaviour (ABMHuB'22)*, online (2022). [web], [pdf]

[100] Probabilistic Modelling of Demographic Changes in Singapore's Neighbourhoods
M. M. Barakatullah, E. J. Willemse, B. Tunçer & R. Bouffanais, *WMCAUS 2021, 6th World Multidisciplinary Civil Engineering, Architecture: Urban Planning Symposium*, June 14-18, Prague, Czech Republic, **(1203)**, 032032 (2021). DOI: 10.1088/1757-899X/1203/3/032032 (2021). [pdf]

[101] Tracking Multiple Fast Targets With Swarms: Interplay Between Social Interaction and Agent Memory
H. L. Kwa, J. L. Kit & R. Bouffanais, *Proceedings of the ALIFE 2021: The 2021 Conference on Artificial Life*, July 19-23, 2021, online, pp. 62–71, ASME, DOI: 10.1162/isal_a_00376 (2021). [pdf]

[102] Tailoring Exploration and Exploitation in Multi-Agent Systems with Short-Term Memory and Limited Social Interaction
H. L. Kwa, J. L. Kit & R. Bouffanais, *3rd International Workshop on Agent-Based Modelling of Human Behaviour (ABMHuB'21)*, July 19-23, online (2021). [web], [pdf]

[103] User-Driven Emergent Patterns of Space Use in Vertically Integrated Urban Environments
S. Gopalakrishnan, D. Wong, A. Manivannan, R. Bouffanais & T. Schroepfer, *Proceedings of the International Conference ARCC 2021*, pp. 215–222, April 7–10, Tucson, AZ, USA, (2021). [web], [pdf]

[104] Mapping Emergent Patterns of Movement and Space Use in Vertically Integrated Urban Developments
S. Gopalakrishnan, D. Wong, A. Manivannan, R. Bouffanais & T. Schroepfer, *Int. Symposium for Architecture + Urban Design simAUD 2021*, pp. 1–4, April 15–17, online, (2021). [web], [pdf]

[105] Heterogeneous Swarms for Maritime Dynamic Target Search and Tracking
H. L. Kwa, G. Tokić, R. Bouffanais & Dick K. P. Yue, *IEEE/MTS Global Oceans 2020: Singapore – U.S. Gulf Coast*, October 5-30, 2020, online, pp. 1–8, DOI: 10.1109/IEEECONF38699.2020.9389145 (2020). [pdf]

[106] Multi-Agent Reinforcement Learning for Dynamic Ocean Monitoring by a Swarm of Buoys
M. Kouzehgar, M. Meghjani & R. Bouffanais, *IEEE/MTS Global Oceans 2020: Singapore – U.S. Gulf Coast*, October 5-30, 2020, online, pp. 9–17, DOI: 10.1109/IEEECONF38699.2020.9389128 (2020). [pdf]

[107] Robust Stabilization of a Class of Networked Nonlinear Systems via Parsimonious Communication and Actuation
N. S. Tripathy, I. N. Kar, M. Chamanbaz & R. Bouffanais, *IECON 2020, The 46th Annual Conference of the IEEE Industrial Electronics Society*, October 18-21, Singapore, pp. 4919–4926, DOI: 10.1109/IECON43393.2020.9255064 (2020). [pdf]

[108] Optimal Swarm Strategy for Dynamic Target Search and Tracking
H. L. Kwa, J. L. Kit & R. Bouffanais, *AAMAS 2020, 19th International Conference on Autonomous Agents and Multiagent Systems*, May 9-13, 2020, Auckland NZ, pp. 672–680, B. An, N. Yorke-Smith, A. El Fallah Seghrouchni, G. Sukthankar (eds.) (2020). [web], [pdf]

[109] A Sequential Algorithm for Sampled Mixed-integer Optimization Problems
M. Chamanbaz & R. Bouffanais, *IFAC 2020, 21th IFAC World Congress*, July 11-17, 2020, Berlin, Germany, pp. 6749–6755, DOI: 10.1016/j.ifacol.2020.12.317 (2020). [pdf]

[110] Device and Method for Analysing and Controlling Cell Motility
R. Bouffanais, X. Zhu & D. K. P. Yue, *Patent US 10,705,012 B2*, Jul. 7 (2020). [web], [pdf]

[111] Climbing Robot
G. S. Soh, R. Bouffanais, S. Foong, A. G. Dharmawan, D. C. Y. Koh & K. L. Wood, *PCT Patent Application WO 2020/214099 A1*, PCT/SG2020/050242, Patent Pending, April 17 (2020). [web], [pdf]

[112] Robust Stabilization of Resource Limited Networked Control Systems Under Denial-of-Service Attack
N. S. Tripathy, M. Chamanbaz & R. Bouffanais, *CDC 2019, 58th IEEE Conf. Decision Control*, December 11-12, 2019, Nice, France, pp. 7683–7689, DOI: 10.1109/CDC40024.2019.9030027 (2019). [pdf]

[113] A Physics-Based Attack Detection Technique in Cyber-Physical Systems: A Model Predictive Control Co-Design Approach
M. Chamanbaz, F. Dabbene & R. Bouffanais, *ANZCC 2019, IEEE Australian & New Zealand Control Conf.* , November 27-29, 2019, Auckland, New Zealand, pp. 18–23, DOI: 10.1109/ANZCC47194.2019.8945588 (2019). [pdf]

[114] Decentralized Multi-Floor Exploration by a Swarm of Miniature Robots Teaming with Wall-Climbing Units
J. Leong Kit, A. G. Dharmawan, D. Mateo, S. Foong, G. S. Soh, R. Bouffanais & K. L. Wood, *MRS 2019, IEEE International Symposium on Multi-Robot and Multi-Agent Systems*, August 22-23, 2019, New Brunswick, NJ, pp. 195–201, DOI: 10.1109/MRS.2019.8901058 (2019). [pdf]
↪ *Received "Outstanding Paper Award"*

[115] Design and Analysis of A Miniature Two-Wheg Climbing Robot with Robust Internal and External Transitioning Capabilities
D. C. Y. Koh, A. G. Dharmawan, H. H. Hariri, G. S. Soh, S. Foong, R. Bouffanais, H. Y. Low & K. L. Wood, *ICRA 2019, IEEE International Conference on Robotics and Automation*, May 20-24, 2019, Montréal, QC, pp. 9740–9746, DOI: 10.1109/ICRA.2019.8793910 (2019). [pdf]

[116] Tail Design of A Miniature Two-Wheg Climbing Robot for External Transitioning
A. G. Dharmawan, D. C. Y. Koh, G. S. Soh, S. Foong, R. Bouffanais & K. L. Wood, *IFToMM 2019, World Congress on Mechanism and Machine Science*, July 15-18, 2019, Krakow, Poland, in *T. Uhl (ed.), Advances in Mechanism and Machine Science*, Mechanisms and Machine Science **(73)**, pp. 2139–2148, DOI: 10.1007/978-3-030-20131-9_212 (2019). [pdf]

[117] Identifying Highly Dense Areas from Raw Location Data
E. J. Willemse, B. Tunçer & R. Bouffanais, *CAADRIA 2019, 24th International Conference of the Association for Computer-Aided Architectural Design Research in Asia*, April 15-18, Wellington, New Zealand, in Intelligent & Informed, Proceedings of the 24th International CAADRIA, **(2)**, pp. 805–814 (2019). [web], [pdf]

[118] A Bio-Inspired Miniature Climbing Robot with Bilayer Dry Adhesives: Design, Modeling, and Experimentation
A. G. Dharmawan, P. Xavier, D. Anderson, K. B. Perez, H. H. Hariri, G. S. Soh, A. Baji, R. Bouffanais, S. Foong, H. Y. Low, K. L. Wood, *IDETC 2018, ASME International Design Engineering Technical Conferences and Computers and Information in Engineering Conference*, August 26-29, 2019, Québec City, QC, DETC2018-85294, V05BT07A036, DOI: 10.1115/DETC2018-85294 (2018). [pdf]
↪ *Received "Best Paper Award"*

[119] Self-Organizing Maps as a Storage and Transfer Mechanism in Reinforcement Learning
T. G. Karimpanal & R. Bouffanais, *ALA 2018, Federated AI Meeting, Adaptive and Learning Agents Workshop*, July 14-15, 2018, Stockholm, Sweden, pp. 1–7, (2018). [web], [pdf]

[120] Gradual Collective Upgrade of a Swarm of Autonomous Buoys for Dynamic Ocean Monitoring
F. Vallegra, D. Mateo, G. Tokić, R. Bouffanais & Dick K. P. Yue, *OCEANS 2018, MTS/IEEE Oceans Charleston*, Charleston, SC, pp. 1–7, DOI: 10.1109/OCEANS.2018.8604642 (2018). [pdf]

[121] Development of a Miniature Robot for Multi-Robot Occupancy Grid Mapping
J. Sundram, D. Van Nguyen, G. S. Soh, R. Bouffanais & K. L. Wood, *ICARM 2018, 3rd IEEE International Conference on Advanced Robotics and Mechatronics*, July 18-20, 2018, Singapore, pp. 414–419, DOI: 10.1109/ICARM.2018.8610745 (2018). [pdf]

[122] ORION-II: A Miniature Climbing Robot with Bilayer Compliant Tape for Autonomous Intelligent Surveillance and Reconnaissance
H. H. Hariri, D. Koh C. Y., H. C. Lim, A. G. Dharmawan, V. D. Nguyen, G. S. Soh, S. Foong, R. Bouffanais, H. Y. Low & K. L. Wood, *ICARCV 2018, 15th IEEE International Conference on Control, Automation, Robotics and Vision (ICARCV)*, November 18-21, 2018, Singapore, pp. 1621–1626, DOI: 10.1109/ICARCV.2018.8581287 (2018). [pdf]

[123] A Decentralized Mobile Computing Network for Multi-Robot Systems Operations
J. Leong Kit, D. Mateo & R. Bouffanais, *UEMCON 2018, 9th IEEE Annual Ubiquitous Computing, Electronics & Mobile Communication Conference*, November 8-10, 2018, New York City, NY, pp. 309–314, DOI: 10.1109/UEMCON.2018.8796753 (2018). [pdf]

[124] A Randomized Distributed Ellipsoid Algorithm for Uncertain Feasibility Problems
M. Chamanbaz, G. Notarstefano & R. Bouffanais, *CDC 2017, IEEE 56th Annual Conference on Decision and Control*, December 12-15, 2017, Melbourne, Vic., pp. 1305–1310, DOI: 10.1109/CDC.2017.8263835 (2017). [pdf]

[125] Randomized Constraints Consensus for Distributed Robust Linear Programming
M. Chamanbaz, G. Notarstefano & R. Bouffanais, *IFAC 2017, 20th IFAC World Congress*, July 9-14, Toulouse, France, IFAC PapersOnLine **(50)**, 4973–4978, DOI: 10.1016/j.ifacol.2017.08.763 (2017). [pdf]

[126] Collision of 3D Bipolar Light Pulses in an Array of Carbon Nanotubes
A. V. Zhukov, R. Bouffanais, B. A. Malomed, H. Leblond, D. Mihalache, E. G. Fedorov, N. N. Rosanov & M. B. Belonenko, *LO 2016, IEEE Intl. Conf. Laser Optics*, June 27-July 1, 2016, St. Petersburg, Russia, pp. R8-69, DOI: 10.1109/LO.2016.7549900 (2016). [pdf]

[127] Integrated 2D Design in the Curriculum: Effectiveness of Early Cross-Subject Engineering Challenges
K. Otto, B. A. Camburn, K. L. Wood, G. Nannicini, R. Bouffanais, E. Kyoseva, J. W. H. Yong, D. Poletti, R. E. Simpson & A. P. Mathur, *121st ASEE Conference & Exhibition*, June 15-18, Indianapolis, IN, pp. 24.763.1–24.763.18, DOI: 10.18260/1-2–20655 (2014). [web], [pdf]

[128] Controllability of a Swarm of Topologically Interacting Autonomous Agents
M. Komareji & R. Bouffanais, *Int. J. Complex Systems in Science* **(3)**, 11–19, (2013). [web], [pdf]

[129] Computational Fluid Dynamics for Architectural Design
S. Kaijima, R. Bouffanais & K. Willcox, In *Open Systems: Proceedings of the 18th International Conference of the Association of Computer-Aided Architectural Design Research in Asia CAADRIA*, (Eds. R. Stouffs, P. H. T. Janssen, S. Roudavski, B. Tunçer), Hong Kong, 169–178, (2013). [pdf]

[130] Grid Filter Modeling for Large-Eddy Simulation
M.A. Habisreutinger, R. Bouffanais & M. O. Deville, In *Notes Num. Fluid Mech. and Multidisciplinary Design* **(110)**, 159–165, DOI: 10.1007/978-3-642-14139-3_19 (2010). [pdf]

[131] Wavelet Analysis of Turbulent LES Data of the Lid-driven Cavity Flow
R. Bouffanais, G. Courbebaisse, L. Navarro & M. O. Deville, In *Notes Num. Fluid Mech. and Multidisciplinary Design* **(110)**, 87–94, DOI: 10.1007/978-3-642-14139-3_10 (2010). [pdf]

[132] Computational Performance of a Parallelized 3D High-order Spectral Element Toolbox
C. Bosshard, R. Bouffanais, C. Clémençon, M. O. Deville, N. Fiétier, R. Gruber, S. Kehtari, V. Keller & J. Lätt, In *Lecture Notes in Computer Science* **(5737)**, 323–329, DOI: 10.1007/978-3-642-03644-6_25 (2009). [pdf]

[133] Grid Filter Models for Large-Eddy Simulation
R. Bouffanais, M. A. Habisreutinger & M. O. Deville, *ICIAM'07, 6th International Congress on Industrial Applied Mathematics and GAMM Annual Meeting*, July 5-7, Zürich, Swizterland, In *Proc. Appl. Math. Mech.* **(7)**, 1101203–1101204, DOI: 10.1002/pamm.200700255 (2007). [pdf]

OPINION EDITORIALS

[134] Counting the Costs of US-China Technology Decoupling
R. Bouffanais & S. S. Lim, *Asia Global* (Hong Kong), December 22, (2022). [web], [pdf]

[135] Why the Cryptocurrency Ecosystem is a House of Cards
R. Bouffanais & S. S. Lim, *The Interpreter* (Australia), Dec 14, (2022). [web], [pdf]

[136] Computational Diplomacy – The Science of an Art?
R. Bouffanais & S. S. Lim, *The Interpreter* (Australia), Sep 15, (2022). [web], [pdf]

[137] Fighting for Data Dregs – And Losing the Fight Against Digital Violence
S. S. Lim & R. Bouffanais, *Asia Global* (Hong Kong), May 26, (2022). [web], [pdf]

[138] When the Mob Rallies: The Gamestop Stock Rush and Complex Contagions
R. Bouffanais & S. S. Lim, *Asia Global* (Hong Kong), March 3, (2021). [web], [pdf]

[139] A Sustainable Alternative to Blanket Lockdowns
S. S. Lim & R. Bouffanais, *Scientific American* (U.S.), Computing Opinion, Oct 22, (2020). [web], [pdf]

[140] How Cities Can Avoid Costly Lockdowns with Smart Use of Big Data
S. S. Lim & R. Bouffanais, *South China Morning Post* (Hong Kong), September 11, (2020). [web], [pdf]

[141] Confronting Viral Resurgences: Are Lockdowns the Only Solution?
R. Bouffanais & S. S. Lim, *Asia Global* (Hong Kong), September 3, (2020). [web], [pdf]

[142] Hoarding Toilet Paper: The Mystery of Such Panic Buying Explained
R. Bouffanais & S. S. Lim, *The Straits Times* (Singapore), February 14, (2020). [web], [pdf]

[143] How to Fight Fake News: Tech Has the Answers
S. S. Lim & R. Bouffanais, *The Straits Times* (Singapore), July 9, (2019). [web], [pdf]

[144] Let's Get Poetic About the Wonders of an Engineering Education
S. S. Lim & R. Bouffanais, *The Straits Times* (Singapore), February 15, (2019). [web], [pdf]

[145] The Rise of *Homo verticalis*
R. Bouffanais & S. S. Lim, *Scientific American* (United States), January 16, (2019). [web], [pdf]

[146] IA, Big Data, IoT... Plaidoyer pour la Création de Conseils Nationaux d'Éthique Numérique
R. Bouffanais & S. S. Lim, *La Tribune* (France), January 13, (2019). [web], [pdf]

[147] Engineering Education Must Also Focus on Social Aspects
S. S. Lim & R. Bouffanais, *The Business Times* (Singapore), December 18, (2018). [web], [pdf]

[148] When High-rise Living Gets a Lift
S. S. Lim & R. Bouffanais, *The Straits Times* (Singapore), December 6, (2018). [web], [pdf]

[149] The Science and Sensibilities of Smart Cities
S. S. Lim & R. Bouffanais, *Asia Global* (Hong Kong), August 9, (2018). [web], [pdf]

[150] Keep an eye on AI and Big Data
R. Bouffanais & S. S. Lim, *The Business Times* (Singapore), July 3, (2018). [web], [pdf]

[151] Smart Rules Needed to Govern Smart Lamp Posts
S. S. Lim & R. Bouffanais, *The Straits Times* (Singapore), April 19, (2018). [web], [pdf]

PRESS COVERAGE & MEDIA ATTENTION

- New York Times & Reuters – March 6, 2020
  "Rationing and Robbery: Coronavirus Outbreak Sparks Toilet Roll Panic" [web]
- EurekAlert American Association for the Advancement of Science (AAAS) – September 12, 2019
  "SUTD's research on a multi-robots system wins Outstanding Paper Award at IEEE MRS 2019" [web]
- EurekAlert American Association for the Advancement of Science (AAAS) – April 5, 2019
  "SUTD uncovers the power of dynamically rewiring swarm robotic systems" [web]
- Phys.org (United States) – April 8, 2019
  "Team uncovers the power of dynamically rewiring swarm robotic systems" [web]
- EurekAlert American Association for the Advancement of Science (AAAS) – October 5, 2017
  "SUTD researchers discovered excessive social interaction reduced collective response" [web]

- Phys.org (United States) – October 4 2017
  "Researchers discovered excessive social interaction reduced collective response" [web]
- Channel NewsAsia (Singapore) – November 7, 2016
  To beat traffic jams, learn from the swarm: "SINGAPORE: Ants, fish and amoeba all have something in common that humans don't – they can work perfectly in tandem to solve a common problem" [web]

GRANTS & CONTRACTS

As Principal Investigator (PI) (in reverse chronological order)

1 Adaptive Tuning of Multi-Agent Systems in Dynamic Environments: Grant #RGPIN-2022-04064
▷ Awarded: $160,000. Duration: 5 years (Apr 2022-Mar 2027)
Sponsor: Natural Sciences and Engineering Research Council of Canada (NSERC)

2 EDB-IPP Cooperative Search in Dynamic Environments: Grant #FNIN-19-0006
▷ Awarded: $100,000 (Ind. Amount: $100,000). Duration: 4 years (Sep 2018-Aug 2022)
Sponsor: Thales Solutions Pte Ltd

3 Design of a Swarm Computing Framework for IoT Systems: Grant #IDG31900101
▷ Awarded: $51,600 (Ind. Amount: $51,600). Duration: 1 year (Jun 2019-May 2020)
Sponsor: SUTD-MIT International Design Center – Special Projects

4 AI-Augmented Swarming: Grant #RTDSP1803051
▷ Awarded: $470,000 (Ind. Amount: $470,000). Duration: 2.5 years (Mar 2019-Nov 2021)
Sponsor: DSO (Defence Science Organization)

5 Sensor Networks in Smart Cities: Grant #ZJUIDEA1801
▷ Awarded: $10,000 (Ind. Amount: $10,000). Duration: 1 year (Jan 2019-Dec 2019)
Sponsor: ZJU-IDEA Seed Program

6 A Unified Paradigm to Teach IoT, Robotics, Control, Decentralized Systems (and more) using LEGOs
▷ Awarded: $9,500 (Ind. Amount: $9,500). Duration: 7 months (Sep 2017-Mar 2018)
Sponsor: SUTD Pedagogy Initiative

7 Urban Analytics: Grant #L2NICTDF1-2017-4 (RGL2NIC1706)
▷ Awarded: $1,471,308 (Ind. Amount: $532,750). Duration: 3 Years (Apr 2017-Mar 2020)
Sponsor: Ministry of National Development (MND) – L2NIC Program

8 Design of a Robust Collective Computing System for Pervasive Monitoring and Surveillance by a Multi-Robot System: Grant #IDG31700107
▷ Awarded: $79,680 (Ind. Amount: $79,680). Duration: 1 Year (Oct 2017-Dec 2019)
Sponsor: SUTD-MIT International Design Center – Special Projects

9 Hybrid Multi-Modal and Multi-Domain Swarm Solution for Pervasive Monitoring: Grant #T1MOE17001
▷ Awarded: $300,000 (Ind. Amount: $150,000). Duration: 2 Years (Jan 2018-Dec 2019)
Sponsor: Ministry of Education – AcRF Tier 1

10 Data-Driven Predictive Modeling of Dynamic Spills: Grants #SMIG-15003 & #SMIG-16003
▷ Awarded: $485,490 (+$40K for travel/equip, Ind. Amount: $485,490). Duration: 2.5 Years (Jun 2015-Dec 2017)
Sponsor: Singapore-MIT Alliance for Research and Technology – CENSAM IRG

11 Dynamic and Cooperative Swarming of Mobile Sensing Buoys: Grant #IGDSS-1501021
▷ Awarded: $50,000 (Ind. Amount: $50,000). Duration: 1 Year (Oct 2015-Sep 2016)
Sponsor: Ministry of Defense – Temasek Lab SEED Projects

12 Dynamic and Cooperative Swarming of Mobile Sensors for Monitoring Tasks: Grant #MOE-T1-2015003
▷ Awarded: $100,000 (Ind. Amount: $100,000). Duration: 2 Years (Jan 2016-Jan 2018)
Sponsor: Ministry of Education – MOE Tier 1

13 Social Dynamics in a Virtual Population of Heterogeneous Agents: Industrial Contract #IGEDF-1501
▷ Contract Price: $44,800 (Ind. Amount: $44,800). Duration: 6 months (2016)
Sponsor: EDF Asian Center for Sustainable Cities

14 Monitoring the Environment Using Large Numbers of Dynamic Cooperative Mobile Sensors: Grant #SMIG-14006
▷ Awarded: $100,000 (Ind. Amount: $100,000). Duration: 1 Year (Nov 2014-Oct 2015)
Sponsor: Singapore-MIT Alliance for Research and Technology – Pilot Project II

15 Real-time Distributed Control and Design in Complex Systems Using Collective Intelligence: Grants #IDD-21100101A & #IDD-11100103A
▷ Awarded: $670,600 (Ind. Amount: $670,600). Duration: 4 Years (Sep 2011-Aug 2015)
Sponsor: SUTD-MIT International Design Center – Computation & Design

16 Cooperative Swimming of Microagents in a Fluid: Fellowship #PBELA–118718
▷ Awarded: USD$60,000 (Ind. Amount: USD$60,000). Duration: 1 Year (Jan 2008-Jan 2009)
Sponsor: Swiss National Science Foundation – Prospective Researcher Fellowship

As Co-Principal Investigator (co-PI) (in reverse chronological order)

17 ETH Future Cities Lab: Emerging Models of Integrated Urban Development
Lead PI: Prof. Sacha Menz (ETHZ) & Prof. Thomas Schroepfer (SUTD)
▷ International Collaborator. Duration: 5 Years (2022-2027)
Sponsor: National Research Foundation (NRF)

18 AI-Driven Situational-Aware Security and Performance Assurance for 5G-Enabled Critical Infrastructures: Grant #MN3-0030
Lead PI: Prof. Burak Kantarci (University of Ottawa)
▷ Total Amount Awarded: $1,500,000. Duration: 3 Years (2023-2025)
Sponsor: iDEaS Department of National Defence
Industry Partners: ThinkRF, BlackBerry QNX

19 Implementation of Large-Scale Pervasive Ocean Monitoring Using a Distributed System of Robots: Grant #2021-R/RRHC-001
Lead PI: Prof. Dick K. P. Yue (Massachusetts Institute of Technology)
▷ Total Amount Awarded: $437,028. Duration: 2 Years (2021-2023)
Sponsor: Sea Grant Program – Office of Naval Research

20 Complex System Studies (Pilot Project) – Vertical Cities: Complex Emergent Patterns of Movement and Space Use in High-Density Urban Contexts: Grant #NOM 200619
Lead PI: Prof. Thomas Schroepfer (Singapore University of Technology and Design)
▷ Total Amount Awarded: $98'000. Duration: 1.5 Years (2019-2021)
Sponsor: Ministry of National Development (MND) & Centre for Liveable Cities (CLC)

21 Design and Reinforcement Security on Smart Grids against Cyber-Physical Attack: Grant #NSOE-DEST-SCI2019-0007
Lead PI: Prof. Yuen Chau (Singapore University of Technology and Design)
▷ Total Amount Awarded: $977,460. Duration: 2.5 Years (Oct 2019-Mar 2022)
▷ Individual Co-PI Share: $310,000
Sponsor: National Satellite of Excellence for Secure Critical Infrastructure

22 A New Paradigm for Pervasive and Persistent Monitoring Using a Distributed System of Robots: Grant #2019-R/RRHC-009
Lead PI: Prof. Dick K. P. Yue (Massachusetts Institute of Technology)
▷ Total Amount Awarded: $480,020. Duration: 2 Years (2019-2021)
Sponsor: Sea Grant Program – Office of Naval Research

23 Fluid Vision: Design & Optimization #IDG31800101– Lead PI: Prof. Pablo Valdivia y Alvarado
▷ Total Amount Awarded: $442,000. Duration: 2.5 Years (Jan 2018-Jun 2020)
▷ Individual Co-PI Share: $100,000
Sponsor: SUTD-MIT International Design Center – Design & Computation

24 ASPIRE: Design of Secure Cyber Physical Systems: Grant #NRF2014-NCR001-040
Lead PI: Prof. Aditya P. Mathur – Project PI for ASPIRE Control
▷ Total Amount Awarded: $5,326,482. Duration: 4 Years (Apr 2015-Mar 2019)
▷ Individual Co-PI Share: $521,000
Sponsor: National Research Foundation (NRF) – NCR Program

25 Systems Technology for Autonomous Reconnaissance & Surveillance (STARS): Grants #IGDST1301015 (Autonomy) & #IGDST1301016 (Control)
Lead PI: Prof. Kristin L. Wood – Project PI for STARS Autonomy & STARS Control
▷ Total Amount Awarded: $4,717,000. Duration: 5 Years (Nov 2013-Oct 2018)
▷ Individual Co-PI Share: $591,000 ($411K: Autonomy + $180K: Control).
Sponsor: Ministry of Defense – Temasek Lab

26 Arch-CFD: Computational Fluid Dynamics for Architecture: Grant #IDD-21100102/#IDG-21100104
▷ Amount Awarded: $152,250. Duration: 2 Years (Jul 2011-Jun 2013)
▷ Individual Co-PI Share: $75,000
Sponsor: SUTD-MIT International Design Center – Special Projects

SUPERVISION & INDIVIDUAL STUDENT/RESEARCHER GUIDANCE

Post-Doctoral Researchers & Research Fellows

1. Dr. Nikolaj Horsevad Sørensen (Jan 2022–present)
Postdoctoral Research Fellow (Ph.D. Singapore University of Technology and Design)
2. Dr. Jabez Leong Kit (co-supervision with Prof. Soh Gim Song, SUTD) (Jan 2022–present)
Postdoctoral Research Fellow (Ph.D. Singapore University of Technology and Design)
3. Dr. Maryam Kouzehgar (co-supervision with Prof. Malika Meghjani, SUTD) (Jul 2019–present)
Research Fellow II (Ph.D. University of Tabriz)
4. Dr. Malik M Barakathullah (second stint) (Feb 2020–Feb Jan 2022)
Research Fellow II (Ph.D. Indian Institute of Science)
5. Dr. Benny Chin Wei Chien (Jun 2019–Dec 2021)
Research Fellow (Ph.D. National Taiwan University)
6. Dr. Elias J. Willemse (Jun 2018–Jan 2020)
Research Fellow (Ph.D. University of Pretoria)
7. Dr. Niladri Tripathy (Jan 2018–Dec 2019)
Postdoctoral Associate (Ph.D. IIT Delhi)
8. Dr. Vahid Hassani (Dec 2016–Oct 2017)
Postdoctoral Associate (Ph.D. Sharif University of Technology)
9. Dr. Jurriaan J. J. Gillissen (Jan 2016–Dec 2017)
Research Scientist (Ph.D. TU Delft: co-supervised with Prof. Dick K. P. Yue)
10. Dr. Wen Xin (Nov 2015–Nov 2016)
Postdoctoral Associate (Ph.D. NTU: co-supervised with Prof. Dick K.P. Yue)
11. Dr. Mohammadreza Chamanbaz (Oct 2015–Jun 2020)
Research Scientist (Ph.D. NUS)
12. Dr. Malik M Barakathullah (first stint) (Oct 2015–Jun 2016)
Postdoctoral Associate (Ph.D. Indian Institute of Science)
13. Dr. David Mateo (Jun 2013–Dec 2018)
Research Fellow (Ph.D. University of Barcelona)
14. Dr. Yilun Shang (Feb 2012–Feb 2014)
Postdoctoral Associate (Ph.D. Shanghai Jiao Tong)
15. Dr. Alex V. Zhukov (Jul 2012–Jun 2016)
Postdoctoral Associate (Ph.D. Kharkov University)
16. Dr. Mohammad Komareji (Jun 2012–Dec 2014)
Postdoctoral Associate (Ph.D. Aalborg University)
17. Dr. Xiaoying Zhu (Sep 2011–May 2015)
SUTD–MIT Postdoctoral Fellow, Postdoctoral Associate (Ph.D. NUS)
18. Dr. Jianmin Sun (Jan 2012–Jan 2013)
Postdoctoral Associate (Ph.D. University of Utah)

Ph.D. Students (6 graduated & 3 ongoing)

1. Amirhosein Sarchami – Ph.D. Student (M.Sc. Azad University) (Sep 2022–present)
2. Mohammad Savari – Ph.D. Student (B.Eng. Arak University of Technology) (Sep 2021–present)
3. Manivannan Ajaykumar (Ajay) – Ph.D. Student (M.Sc. NTU-TUM) (Sep 2018–present)
4. Hian Lee Kwa – Ph.D. Student (M.Eng. University of Surrey) (Sep 2018–Aug 2022)
5. Jabez Leong Kit – Ph.D. Student (B.Eng. EPD SUTD) (Jan 2017–Dec 2021)
6. Nikolaj Horsevad Sørensen – Ph.D. Student (M.Sc. Aalborg University) (Sep 2016–Aug 2021)
7. Sreetej Lakkam – Ph.D. Candidate (M.Eng. NTU–TUM) (Sep 2015–Aug 2020)
8. Thommen Karimpanal George – Ph.D. Candidate (M.Sc. NUS) (Sep 2014–Jan 2019)
9. Yoke Kong Kuan – Ph.D. (M.Sc. University of Chicago) (Sep 2013–Aug 2018)

Master Students, Research Assistants & Engineers (1 graduated & 3 ongoing)

1. Amr Hossam Okail – Master of Applied Science (B.Sc. Arab Academy for Science, Technology and Maritime Transport, Egypt) (Sep 2022–present)
2. Mohamed Yasser – Master of Applied Science (B.Eng. Abu Dhabi University) (Sep 2022–present)
3. Julien Philippot – Master of Applied Science (B.Eng. uOttawa) (Jan 2022–present)
4. Edith Gracia Sharon Lawrence – Master of Engineering (Sep 2019–Aug 2021)
5. Peter Jagadpramana – Research Engineer (M.Sc. NTU) (Jan 2019–Oct 2020)
6. M. Zaki B. Djuanda – Research Engineer (B.Eng. SUTD) (Jan 2017–Dec 2017)
   co-supervised with Prof. Dick K. P. Yue (MIT)
7. Manivannan Ajaykumar (Ajay) – Research Assistant (M.Sc. NTU-TUM) (Nov 2016–Aug 2018)
8. Francesco Vallegra – Research Engineer (M.Sc. KTH Stockholm) (May 2016–present)
9. Chaitanya Ganesh – Research Assistant (LNM IIT, Jaipur) (Jan 2016–Aug 2017)
10. Louis Goh Cheng Rong – Research Assistant (B.Eng. EE NUS) (Sep 2015–Sep 2017)
11. Suresh Naidu – Research Engineer (M.Eng. ENSAE France) (Oct 2011–Oct 2012)

INVITED PRESENTATIONS

I.1	Invited Speaker – College of Engineering, Design and Computing University of Colorado, Denver (CO), US, March 14, 2024	(Mar 2024)	[web]
I.2	Invited Speaker – EESS seminar series, ENAC Faculty EPFL, Lausanne, Switzerland, March 12, 2024	(Mar 2024)	[web]
I.3	Panelist – AI2SI (AI for Industry, Science and Society) "Computational Diplomacy" Campus BioTech, Geneva, Switzerland, September 11-15, 2023	(Sep 2023)	[web]
I.4	Keynote Speaker – "Swarm Computing" (Emerging and Disruptive Technologies Workshop) Deparment of National Defence, Ottawa, November 25-29, 2021	(Nov 2021)	
I.5	Panel Speaker (Track 1.5) – Workshop "Building Inclusive and Trustworthy AI Governance" NTU S. Rajaratnam School of International Studies, online, March 23-25, 2021	(Mar 2021)	
I.6	Keynote Speaker – The 11th Dynamics Day Asia-Pacific DDAP11, Singapore & online, November 16-20, 2021	(Nov 2020)	
I.7	Invited Panelist – "Tech and the Pandemic" Video Podcast Asia Global Online, Hong Kong & online, Sep 9 2020	(Sep 2020)	[web]
I.8	Invited Panelist – "Dense+Green Cities" Webinar ETH Zürich Future Cities Lab (FCL), online, May 5 2020	(May 2020)	[web]
I.9	Keynote Speaker – IEEE Intl. Conf. on Computing and Communication Technologies IEEE-RIVF 2020, Ho Chi Minh City, Vietnam, April 5-7, 2020	(Apr 2020)	[web]
I.10	Invited Speaker (with honorarium) – College of Control Science and Engineering Zhejiang University, Hangzhou, PRC, December 16–18, 2019	(Dec 2019)	[web]
I.11	Plenary Panel Speaker – Workshop on "AI, Robotics and the future of Defense" NTU S. Rajaratnam School of International Studies, Singapore, November 11-12, 2019	(Nov 2019)	[web]
I.12	Visiting Lecturer – Doctoral Course on "Networked System & Collective Computing" Doctoral School in Computer Science, University of Luxembourg, September 15-25, 2019	(Sep 2019)	
I.13	Keynote Speaker – Asian Workshop on Theoretical and Applied Mechanics (AWTAM 2019), Hangzhou, China, August 24-27, 2019	(Aug 2019)	[web]
I.14	Plenary Speaker & Participant – Airbus Blue Sky & Imperial College Flying Brain Workshop, Munich, Germany, July 17-19, 2019	(July 2019)	[web]
I.15	Invited Speaker – NTU Complexity Institute Seminar Series, Singapore "Optimal Network Topology for Responsive Collective Behavior"	(Apr 2019)	[web]
I.16	Invited Speaker – Science of Cities: Workshop co-organized by URA & CLC, NTU "Vertical Cities: Complex Emergent Patterns" (jointly with Prof. T. Schroepfer)	(Jan 2019)	
I.17	Invited Speaker – ILIAS Distinguished Lecture, University of Luxembourg "From Networked Control Systems Theory to Swarm Computing"	(Sep 2018)	[web]
I.18	Plenary Speaker & Panelist – IEEE SAUV Challenge 2018 "Swarming technology for pervasive monitoring"	(Mar 2018)	[web]
I.19	Plenary Speaker – Institution of Engineers of Singapore Seminar on Connected Autonomous Vehicles (CAVs): "Swarm of Autonomous Vehicles"	(Feb 2018)	
I.20	Invited Speaker – DSO National Laboratories Seminar hosted by Chief Data Scientist:"The Future of Swarming Systems"	(Dec 2017)	
I.21	Plenary Speaker – St John's Island National Marine Lab, Singapore 15th Anniversary Public Celebrations: "Harnessing Swarm Intelligence"	(Nov 2017)	
I.22	Invited Speaker – Institute of Fluid Mechanics, Toulouse (IMFT), France "Growth mechanisms of perturbations in boundary layers over a compliant wall"	(Jul 2017)	
I.23	Plenary Speaker – 10^{th} Annual CENSAM Workshop, SMART, Singapore "Distributed System of ASVs for Scalable Monitoring"	(Jun 2017)	
I.24	Invited Speaker – CQT Interdisciplinary Theory Group, NUS, Singapore "Excess of Social Behavior Reduces the Capacity to Respond to Perturbations"	(Jan 2017)	
I.25	Invited Speaker – NTU Complexity Institute Seminar Series, Singapore "Collective Dynamics of Swarms in the Presence of Conflicting External Signals"	(Dec 2016)	
I.26	Plenary Speaker – 9^{th} Annual CENSAM Workshop, NUS Shaw Foundation, Singapore Joint talk with Prof. Dick K.P. Yue (MIT)	(Jun 2016)	
I.27	Plenary Speaker – IEEE RAS Multi-Robot Systems Summer School, NUS, Singapore "Design and Control of Swarming Systems"	(Jun 2016)	

I.28 Invited Speaker – Boldrewood Campus, The University of Southampton, U.K. (Jun 2016)
Department of Engineering: "Harnessing Swarm Intelligence"

I.29 Plenary Speaker– SUT Technical Meeting, Park Royal Hotel, Singapore (May 2016)
New Technologies Meeting: "Swarming technology for pervasive monitoring"

I.30 Invited Speaker – ETH Future Resilient Systems Center, Singapore (May 2016)
Resilient Systems Workshop:"Swarming Systems: Design & Control"

I.31 Plenary Speaker – Winter School on Complexity, NTU Complexity Institute (Mar 2016)
"Design and Control of Swarm Dynamics"

I.32 Invited Speaker – CPU Cluster of Excellence (Visiting Scholar Program), Bordeaux, France (Jul 2015)
University of Bordeaux: "Design of Artificial Swarming Behaviors"

I.33 Plenary Speaker – 8th Annual CENSAM Workshop, NUS Shaw Foundation, Singapore (Jun 2015)
Joint talk with Prof. Dick K.P. Yue (MIT) "SMART SWARMS"

I.34 Plenary Speaker & Panelist – SCy-Phy Systems International Workshop, Singapore (Jun 2015)
"Secure Dynamic Control of Complex Systems"

I.35 Invited Speaker – Singapore MIT Alliance for Research and Technology (SMART), Singapore (Apr 2015)
CENSAM Seminar Series on Marine Research: "Design of Artificial Swarming Behaviors"

I.36 Invited Speaker – VFRL, Department of Mechanical Engineering, MIT, Cambridge (Dec 2014)
"Design and Control of Dynamic Collective Behaviors"

I.37 Invited Lecturer – Graduate School of Materials Science and Engineering, NTU, Singapore (Apr 2014)
"Design and Control of Dynamic Collective Behaviors"

I.38 Invited Speaker – Dept. of Mechanical Engineering, Faculty of Engineering, NUS (Apr 2010)
"Design and Control of Dynamic Collective Behaviors"

I.39 Invited Speaker – LTH, Paul Scherrer Institute (PSI), Villigen, Switzerland (Oct 2009)
"Unsteady transitional swirling flow in the presence of a moving free surface"

I.40 Plenary Speaker – The von Kármán Institute, Rhode-St-Genèse, Belgium (May 2009)
"HPC with Spectral Element Methods" (co-Lecturer)

I.41 Invited Speaker – Scientific Computing Seminar Series, DAM, Brown University, Providence (May 2009)
With Honorarium: "Unsteady transitional swirling flow in the presence of a moving free surface"

I.42 Invited Speaker – Department of Applied Mathematics, MIT, Cambridge (MA) (Mar 2009)
"Unsteady transitional swirling flow in the presence of a moving free surface"

I.43 Invited Speaker – IBM Deep Computing Seminars, Zürich, Switzerland (Oct 2008)
Air travel & Accommodation covered by IBM Research: "Simulation of shear-driven flows: transition with a free surface & confined turbulence"

I.44 Award Lecture – Award Ceremony, Doctoral School, EPFL, Lausanne, Switzerland (Oct 2008)
"Simulation of shear-driven flows: transition with a free surface & confined turbulence"

I.45 Invited Speaker – MMEC Series, Dept. of Civil & Env. Eng., MIT, Cambridge (MA) (Apr 2008)
"Simulation of shear-driven flows: transition with a free surface & confined turbulence"

I.46 Invited Speaker – Royal Academy, ERCOFTAC Science Forum, Brussels, Belgium (Oct 2007)
Air travel & Accommodation covered: "Large-eddy simulation of cavity flow by the spectral element method"

I.47 Invited Speaker – CREATIS-LRMN Research Lab, Lyon, France (Sep 2007)
UMR 5220, INSERM U 630 – Transportation & Accommodation covered: "Moving-grid techniques using spectral element methods for moving boundary problems"

I.48 Invited Speaker – Continuing Education Lecture Series, EPFL, Lausanne, Switzerland (Aug 2007)
"Parallelization of Spectral Element Methods" (co-Lecturer)

I.49 Invited Speaker – TREFLE Research Lab, UMR 8508, ENSCPB Bordeaux, France (Mar 2007)
Air travel & Accommodation covered: "Large-eddy simulation of cavity flow by the spectral element method"

I.50 Invited Speaker – Physical Mathematics Seminar Series, MIT, Cambridge (MA) (Nov 2006)
"Spectral Element Method for LES of Turbulent Confined Flows"

I.51 Invited Speaker – Annual Meeting of the Leonhard Euler Center, EPFL, Lausanne, Switzerland (Nov 2006)
European Research Community on Flow Turbulence and Combustion (ERCOFTAC): "Spectral Element Method for LES of Turbulent Confined Flows"

I.52 Invited Speaker – Conference of the Dutch-Flemish Numerical Analysis Communities (Oct 2006)
Lecture Series on Numerical Analysis (co-lecturer), Woudschoten, The Netherlands: "The Spectral Element Method for Fluid Flow Problems"

I.53 Invited Speaker – Center for Environmental and Applied Fluid Mechanics (Jul 2006)
Johns Hopkins University, Baltimore (MD): "Spectral Element Method for LES of Turbulent Confined Flows"

PROFESSIONAL SERVICE

- *IEEE/SICE International Symposium on System Integration (SII)*, SII 2024, Associate Editor: Ha Long, Vietnam (January 8-11, 2024)
- *IEEE International Symposium on Robotics and Sensors Environments*, IEEE ROSE 2021: Technical Program Co-Chair & Tutorial and Special Session Co-Chair
- *IEEE International Conference on Robotics and Automation (ICRA)* 2021–2023: "Multi-Agent Systems" Associate Editor & Area Chair – ICRA 2021: Xi An, PRC (May 30–June 5, 2021), ICRA 2022: Philadelphia, PA (May 23–27, 2022), ICRA 2023: London, UK (May 29–June 2, 2023), ICRA 2024: Yokohama, Japan (May 13–17, 2024)
- *IEEE International Conference on Intelligent Robots and Systems (IROS)* 2020–2022: "Multi-Agent Systems" Associate Editor & Area Chair – IROS 2020: Las Vegas, NV (October 25–29, 2020), IROS 2021: Prague, Czech Republic (September 27–October 1, 2021), IRO 2022: Kyoto, Japan (October 23–27, 2022)
- *International Conference on Computing and Communication Technologies 2020*: Track Chair
  Smart Computing & Computational Modeling IEEE RIVF 2020: RMIT Ho Chi Minh City, Vietnam
- *Conference on Complex Systems (CCS) 2019*: Co-organizer (Organizing & Program Committees)
  CCS 2019: Singapore, Nanyang Technological University
- *IEEE UEMCON* 2019: Technical Committee – Track XI: Distributed systems and Robotics
  UEMCON Columbia University, New York, NY (Oct 10–12, 2019)
- *IEEE RAS International Symposium on Multi-Robot and Multi-Agent Systems*: Area Chair & Editor
  MRS 2019: Rutgers University, NJ: Swarm Intelligence
- *NVIDIA Deep Learning Institute (DLI)*: Certified Instructor & University Ambassador (2018-2020)
  Teach DLI workshops and host DLI lab meet-ups at universities and events at no cost to attendees
- *IEEE RAS Multi-Robot Systems Summer School 2016*: Co-organizer
  Proposal awarded USD$40,000 by the IEEE RAS – Plenary Lecture and Organized Hands-on Design Workshop (Singapore, NUS & SUTD 2016)
- *Satellite Session "Swarming Systems: Analysis, Modeling and Design"*: Lead Organizer
  Conference on Complex Systems – Complex Systems Society (Amsterdam, The Netherlands 2016)
- *Conference/Competition Committees and Chairs:*
  - Member – Program Committee: ALIFE 2023, Sapporo, Japan
  - Member – Program Committee: Int. Conf. Computational Science (ICCS) 2023, Prague CZ
  - Member – Program Committee: IEEE Symposium on Artificial Life (ALife 2022), Singapore
  - Member – Program Committee: Adaptive Learning Agents (ALA 2020: Auckland NZ; ALA2021: Free University of Brussels Belgium; ALA2022: Auckland NZ; ALA2023: London UK)
  - Member – Program Committee: IEEE/MTS OCEANS Singapore – 2020
  - Member – Awards Selection Committee: Complex Systems Society (CSS) – 2019
  - Member – Program Committee: Adaptive Learning Agents (ALA 2019, Montréal)
  - Logistics Chair – Complex Systems Society (CSS) for CCS 2019 to be held in Singapore
  - Member – Program Committee: Adaptive Learning Agents (ALA 2018, Stockholm)
  - Member – Awards Selection Committee: Complex Systems Society (CSS) – 2017
  - Member – Program Committee: Conference on Complex Systems (CCS 2016, Amsterdam)
  - Session Chair – Estimation and filtering: IFAC 2017 (Toulouse, France, 11 Jul 2017)
  - Session Chair – Main Track: ICCS 2015 (Reykjavik Iceland)
  - Session Chair – Complexity Conference (NTU Singapore, 3–5 Mar 2014)
  - Member – Jury Award Committee: 2012 Palabos Challenge (open-source CFD software)

- *Peer-Review Activity:*
  - Israel Science Foundation (ISF) (Israel, 2023)
  - Fonds de Recherche du Québec - Nature et Technologie (Canada, 2022)
  - NSERC Discovery Grants (Canada, 2022)
  - Mitacs Accelerate Grants (Canada, 2021–2022)
  - Book proposals reviewer for CRC Press–Taylor & Francis (with honorarium)
  - Review of Grant proposals and Fellowships for International Organizations: MacArthur Fellows Program, National Science Centre (NCN), FONDECYT – National Commission for Scientific Research of Chile, Austrian Science Fund (FWF), Polish Narodowe Centrum Nauki (NCN)
  - 2018 Peer-Review Award (Top Reviewer Cross-Field) – Web of Science

CONFERENCE PRESENTATIONS

Non-exhaustive list of oral and poster presentations:

- The 2023 Conference on Artificial Life (ALIFE2023), Sapporo, Japan: Contributed talk *"The Impact of Agent Density and Environmental Factors on Target Tracking Swarms"* (Jul 2023)
- Intl. Conf. on Computational Science (ICCS 2023), Prague, Czech Republic: Contributed talk *"Leveraging Social Contagion to Foster Consensus in Collective Decision-Making"* (Jul 2023)
- IEEE Intl. Conf. Robotics and Automation (ICRA), London, UK: *"Multi-Target Pursuit by a Decentralized Heterogeneous UAV Swarm using Deep Multi-Agent Reinforcement Learning"* (May 2023)
- IEEE 61st Annual Conference on Decision and Control (CDC), Cancún, Mexico: Contributed talk "Finite-time Event-triggered Control for a Class of Nonlinear Systems" (Dec 2022)
- World Cities Summit 2022. "Liveable and Sustainable Cities: Emerging Stronger", Singapore, Singapore: Poster "Resilient Urban Spatial Networks" (Jul-Aug 2022)
- The 2021 Conference on Artificial Life (ALIFE2021), Online: Contributed talk *"Tracking Multiple Fast Targets With Swarms: Interplay Between Social Interaction and Agent Memory"* (Jul 2021)
- Conf. on Complex Systems (CCS 2020), online: 2 Contributed talks: (1) *"Informed design of future integrated developments using complexity science"*, (2) *"Identification of super-spreaders and super-susceptibles locations from directed and weighted human movement networks for disease control and prevention"* (Dec 2020)
- The 2020 IEEE/MTS Global Oceans, Singapore – U.S. Gulf Coast: Two contributed talks *"Multi-Agent Reinforcement Learning for Dynamic Ocean Monitoring by a Swarm of Buoys"* and *"Heterogeneous Swarms for Maritime Dynamic Target Search and Tracking"* (Oct 2020)
- 19th International Conference on Autonomous Agents and Multiagent Systems (AAMAS 2020), Auckland, New Zealand (online): Contributed talk *"Optimal Swarm Strategy for Dynamic Target Search and Tracking"* (Jul 2020)
- 21st World Congress of the Intl. Fed. of Automatic Control (IFAC), Berlin, Germany: Paper *"A Sequential Algorithm for Sampled Mixed-integer Optimization Problems"* with oral presentation (Jul 2020)
- IEEE 58th Annual Conference on Decision and Control (CDC), Nice, France: Contributed talk "Robust Stabilization of Resource Limited Networked Control Systems Under Denial-of-Service Attack " (Dec 2019)
- IEEE 2019 Australian & New Zealand Control Conference (ANZCC 2019), Auckland, New Zealand: Contributed talk "A Physics-Based Attack Detection Technique in Cyber-Physical Systems: A Model Predictive Control Co-Design Approach" (Nov 2019)
- 72nd Annual Meeting of the APS-DFD, Seattle (WA): Contributed talk *"Predicting long-term dynamics of chaotic systems with hybrid machine learning"* (Nov 2019)
- 72nd Annual Meeting of the APS-DFD, Seattle (WA): Contributed talk *"Data assimilation method to de-noise and de-filter data"* (Nov 2019)
- Conf. on Complex Systems (CCS 2019), Singapore: 2 Contributed talks "Towards Decentralised Particle Swarms" and "Collective Computing Framework for Swarming Systems" & 1 Ignite Talk "Leader-Follower Distributed Consensus in Swarming Systems" (Sep 2019)
- IEEE International Symposium on Multi-robot and Multi-agent Systems (MRS 2019), New Brunswick, NJ: Contributed talk "Decentralized Multi-Floor Exploration by a Swarm of Miniature Robots Teaming with Wall-Climbing Units" (Aug 2019)
- IEEE Intl. Conf. Robotics and Automation (ICRA), Montréal, QC: Pod Talk *"Design and Analysis of A Miniature Two-Wheg Climbing Robot with Robust Internal and External Transitioning Capabilities"* (May 2019)

– 24th International CAADRIA, Wellington, New Zealand: Contributed talk "Identifying Highly Dense Areas from Raw Location Data" (Apr 2019)
– 71st Annual Meeting of the APS-DFD, Atlanta (GA): Contributed talk *"Growth mechanisms of perturbations in boundary layers over a compliant wall"* (Nov 2018)
– 71st Annual Meeting of the APS-DFD, Atlanta (GA): Contributed talk *"Hydrodynamic object identification using artificial neural networks"* (Nov 2018)
– 71st Annual Meeting of the APS Division of Fluid Dynamics, Atlanta (GA): Poster *"A Space-time Integral Minimisation Method For The Reconstruction of Vector Fields From Measured Scalar Fields"* (Nov 2018)
– Conf. on Complex Systems (CCS 2018), Thessaloniki, Greece: Contributed talk *"Optimal Interaction Network Topology for Effective Collective Response to External Perturbations"* (Sep 2018)
– Towards Human Level General AI Joint Workshop – A*Star/SUTD/NTU, Fusionopolis Singapore: *"Collective Reinforcement Learning for Human-Swarm Interaction"* (Jun 2018)
– IEEE 56th Annual Conference on Decision and Control (CDC), Melbourne, Australia: Contributed talk "A Randomized Distributed Ellipsoid Algorithm for Uncertain Feasibility Problems" (Dec 2017)
– 20th World Congress of the Intl. Fed. of Automatic Control (IFAC), Toulouse, France: Paper *"Randomized Constraints Consensus for Distributed Robust Linear Programming"* with oral presentation (Jul 2017)
– Intl. Conf. on Computational Science (ICCS 2017), Zürich, Switzerland: Contributed talk *"Agent-based Simulations of Swarm Response to Predator's Attack"* (Jun 2017)
– Conf. on Complex Systems (CCS 2016), Amsterdam, The Netherlands: 2 Contributed talks: (1) *"Excess of Social Behavior Reduces the Capacity to Respond to Perturbations"*, (2) *"Influence of interaction network topology on the dynamical response of swarming systems"* (Sep 2016)
– STATPHYS26, Satellite on Complex Networks, Marseille, France: Contributed talk *"Influence of interaction network topology on the dynamical response of swarming systems"* (Jul 2016)
– Conf. on Complex Systems 2016, Wessex Institute, New Forest, UK: Paper *"Excess of Social Activity Reduces the Responsiveness of Swarms"* with oral presentation (Jun 2016)
– Conf. on Complex Systems (CCS 2015), Tempe, AZ: 2 Contributed talks: (1) *"Information flow and effective swarm responses"*, (2) Effect of the number of interactions on collective responses (Sep 2015)
– Intl. Conf. on Computational Science (ICCS 2015), Reykjavik, Iceland: Contributed talk *"Swarming collapse under limited information flow between individuals"* (Jun 2015)
– Eur. Conf. on Complex Systems (ECCS'14), Lucca, Italy: 2 Contributed talks: (1) *"Impact of local communication rate on emergent swarming behaviors"*, (2) *"Interplay between signaling network design and swarm dynamics"* (Sep 2014)
– Intl. Conf. on Computational Science (ICCS 2014), Cairns, Queensland, Australia: Contributed talk *"Consensus reaching in swarms ruled by a hybrid metric-topological distance"* (Jun 2014)
– Intl. Conf. Net-Works 2013, El Escorial, Spain: 1 Paper and 2 Contributed talks: (1) *"Controllability of a swarm of topologically interacting autonomous agents"*, (2) *"Influence of the structure of the signaling network on swarm dynamics"* (Dec 2013)
– 18th Intl. Conf. of the Association of Computer-Aided Architectural Design Research in Asia (CAADRIA 2013), Singapore: Paper *"Computational Fluid Dynamics for Architectural Design"* and oral presentation (Nov 2013)
– 8th Intl. Conf. for Mesoscopic Methods in Engineering and Science, Lyon, France: Contributed talk *"Simulation of the flow inside the cochlear duct using the Lattice Boltzmann method"* (Jul 2011)
– 62nd Annual Meeting of the APS Division of Fluid Dynamics, Minneapolis (MN): Contributed talk *"Hydrodynamic mapping using pressure sensing"* (Nov 2009)
– 2nd Conference on Turbulence and Interaction, Sainte-Luce, France: 2 Papers and oral presentations: (1) *"Grid Filter Modeling for Large-Eddy Simulation"*, (2) *"Wavelet analysis of turbulent LES data of the lid-driven cavity flow"* (Nov 2008)
– 61st Annual Meeting of the APS Division of Fluid Dynamics, San Antonio (TX): Contributed talk *"Swirling flow in presence of a moving free surface"* (Nov 2008)
– 18th Congrès français de Mécanique, Grenoble, France: Paper *"Simulation of the flow in a lid-driven cavity using dynamic approximate deconvolution models"* and oral presentation (Aug 2007)
– 6th Intl. Congress on Industrial and Applied Mathematics (ICIAM), Zürich, Switzerland: Paper *"Grid filter modeling for LES"* and oral presentation (Aug 2007)
– 7th Intl. Conf. On High-Order And Spectral Method (ICOSAHOM), Chinese Academy of Sciences, Beijing, PRC: 2 Contributed talks: (1) *"Recent advances in large-eddy simulations by the spectral element method"*, (2) *"Direct numerical simulation of free-surface swirling flows by the Legendre spectral element method"* (Jun

2007)

- 59th Annual Meeting of the APS Division of Fluid Dynamics, Tampa Bay (FL): Contributed talk *"LES of the flow in a lid-driven cavity using dynamic approximate deconvolution models"* (Nov 2006)
- Symposium on Advanced Numerical Methods in Engineering, Brussels, Belgium: Contributed talk *"Large-eddy simulation of cavity flow by the spectral element method"* (Jul 2006)
- Intl. Conf. on Turbulence and Interaction, Porquerolles, France: Contributed talk *"Large-eddy simulation of cavity flow by the spectral element method"* (May 2006)
- Schweizer Numerik Kolloquium, Lausanne, Switzerland: Contributed poster *"Large-eddy simulations of turbulent free-surface flows by the spectral element method"* (Apr 2006)
- 17th IMACS World Congress on Scientific Computation Applied Mathematics and Simulation, Paris, France: Contributed talk *"Moving-grid techniques using spectral element methods for moving boundary problems"* (Jul 2005)
- 7th Intl. Conf. on Mathematical and Numerical Aspects of Waves, Brown University, Providence (RI): Paper *"Simulation of standing waves using moving-grid techniques with spectral element methods"* and oral presentation (Jun 2005)
- 3rd MIT Conf. on Computational Fluid and Solid Mechanics, Cambridge (MA): Contributed talk *"Simulation of free-surface flows using moving-grid techniques with spectral element methods"* (Jun 2005)
- 6th Intl. Conf. On High-Order And Spectral Method (ICOSAHOM), Brown University, Providence (RI): Contributed talk *"Moving-boundary problems with the spectral element method"* (Jun 2004)

SOFTWARE DEVELOPMENT

- `marabunta`: A Python library for the design and control of artificial swarms (jointly developed with Dr. David Mateo, Postdoctoral Associate in the Applied Complexity Group) [web]
- `openSPECULOOS`: open-source parallel spectral and mortar element toolbox in C++ [web]