

## Roland Bouffanais

Assistant Professor, Singapore University of Technology and Design (SUTD)

Pillar of Engineering & Product Development  
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### EARNED DEGREES

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<i>Degree</i>	<i>Year</i>	<i>University</i>	<i>Field</i>
Ph.D.	2007	Swiss Federal Institute of Technology Lausanne (EPFL)	Mechanical Engineering
M.Sc.	1999	École Normale Supérieure (ENS) Lyon	Fundamental Physics
M.Sc.	1999	UPMC – Paris Sorbonne University	Hydrodynamics
‘Agrégation’	1998	French higher teaching certificate	Physics

### POSITIONS HELD

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<i>Title</i>	<i>Organization</i>	<i>Years</i>
<i>Assistant Professor</i>	Singapore University of Technology and Design Pillar of Engineering Product Development	2011–present
<i>Research Associate</i>	Massachusetts Institute of Technology (MIT) Department of Mechanical Engineering	2010–present
<i>Research Fellow</i>	University of Geneva (UNIGE) Department of Computer Science (CUI), SPC group	2010–2011
<i>Visiting Scholar</i>	Swiss Federal Institute of Technology Lausanne (EPFL) Department of Mechanical Engineering, LFMI group	2010–2011
<i>Visiting Lecturer</i>	Swiss Federal Institute of Technology Lausanne (EPFL) Department of Mechanical Engineering	Fall 2010
<i>Postdoctoral Fellow</i>	Massachusetts Institute of Technology (MIT) Department of Mechanical Engineering, VFRL group	2008–2010
<i>Research Scientist</i>	Swiss Federal Institute of Technology Lausanne (EPFL) School of Engineering	2007
<i>Visiting Scholar</i>	Johns Hopkins University School of Engineering, Department of Civil Engineering	Summer 2006
<i>Research Assistant</i>	Swiss Federal Institute of Technology Lausanne (EPFL) School of Engineering	2003–2007
<i>Physics Instructor</i>	National University of Singapore NUS double degree program (concurrently manager)	2001–2003
<i>Admission Board Member</i>	Preparatory Classes for Grandes Écoles École Centrale Paris & École Supérieure d’Électricité	2001
<i>Physics Instructor</i>	Preparatory Classes for Grandes Écoles (2nd Year) French Ministry of Education	2001–2003

### HONORS AND AWARDS

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- 2011 Member of the Editorial Board of *Computers & Fluids* (Published by Elsevier)
  - 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 Doctorate Award
  - 2007 ERCOFTAC Da Vinci Award: “Best European Doctoral thesis on Flow, Turbulence and Combustion”: Silver medal
  - 2007 Swiss National Science Foundation, Prospective Researcher Fellowship
  - 2003 Swiss Federal Institute of Technology Lausanne, Doctoral School Merit Scholarship
  - 1999 École Normale Supérieure de Lyon, Teaching and Research Scholarship

## TEACHING

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

- Ph.D. Course Course Lead: 30.504 – Computational Science & Engineering (Springs 2015–2017)
- UG Term 5 Course Lead: 30.103 – Fluid Mechanics (Springs 2014–2017)
- UG Term 3 Cohort Instructor: 10.008 – Engineering in the Physical World (Spring 2014)
- UG Term 3 Course Lead: 10.008 – Engineering in the Physical World (Spring 2013)
- UG Term 1 Instructor: 10.002 – Physics 1 (Summer 2012)
- Term 0 Instructor: Integrated Learning Program 2 – Physics 2

### Swiss Federal Institute of Technology Lausanne (EPFL) – Graduate & Doctoral Schools

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

### Swiss Federal Institute of Technology Lausanne (EPFL) – Undergraduate Courses

- Falls 2003–2006 Teaching Assistant: Incompressible Fluid Mechanics
- Springs 2005–2006 Teaching Assistant: Continuum Mechanics
- Springs 2004–2006 Teaching Assistant: Hydrodynamics

### National University of Singapore (NUS)

- Falls 2001–2002 Instructor: Physics—bachelor level, double degree program with French “Grandes Écoles”
- Springs 2001–2003 Instructor: Physics applied to Engineering—Faculty of Engineering and Science

### Preparatory Classes for Engineering Schools

- 1999–2001 Instructor: Complete Physics curriculum (Sophomore level)

## PATENTS & TECHNOLOGY DISCLOSURES

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- U.S. Provisional Patent Application No. 62/151,530 “Device and Method for Analyzing Cell Motility”
- Full patent application filed: “Device and Method for Analyzing Cell Motility”
- Technology Disclosure: “Method for the characterization and differentiation of material surfaces using compound responses for mechanically driven cells”

## SCHOLARLY ACCOMPLISHMENTS

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### Book Publications

- [B1] **Design and Control of Swarm Dynamics** web, doi  
R. Bouffanais, Springer, Complexity Series ISBN 978-9812877505, 118 pages, 2016.
- [B2] **Thermodynamics** pdf  
R. Bouffanais, Prepamath Edition (In French), ISBN 2-910350-30-4, 192 pages, 1999.

### Chapters in Books

- [C3] **Complex Systems: Theory and Applications** doi  
D. Mateo & R. Bouffanais, Chapter 18: Excess of social activity reduces the responsiveness of swarms (Eds. G. Rzeski and C.A. Brebbia), WIT Press, Pages 172–180, Print ISBN: 978-1-78466-235-6, eBook ISBN: 978-1-78466-236-3, 2017.
- [C4] **Graphene Science Handbook Nanostructure and Atomic Arrangement** pdf, doi  
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. Aliofkhaezrai, N. Ali, W. I. Milne, C. S. Ozkan, S. Mitura, and J. L. Gervasoni), CRC Press, Pages 327339, Print ISBN: 978-1-4665-9137-0, eBook ISBN: 978-1-4665-9138-7, 2016.
- [C5] **High-Performance Computing of Industrial Flows** pdf, doi  
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.

## Refereed Article Publications

- [J6] **Experience Replay Using Transition Sequences** pdf  
T. G. Karimpanal & R. Bouffanais, *Artificial Intelligence*, Under Review [arXiv:1705.10834], 2017.
- [J7] **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*, Under Review, 2017.
- [J8] **A Distributed Ellipsoid Algorithm for Uncertain Convex Problems: A Randomized Approach**  
M. Chamanbaz, G. Notarstefano & R. Bouffanais, Under Review, 2017.
- [J9] **Growth mechanisms of perturbations in boundary layers over a compliant wall** pdf  
M. Malik, M. Skote & R. Bouffanais, *Phys. Rev. Fluids*, Under Review [arXiv:1705.02615], 2017.
- [J10] **Anomalous slowing down of individual human activity due to successive decision-making processes** pdf  
A. V. Zhukov, R. Bouffanais & S. Fedotov, *Stud. App. Math.*, Under Review [arXiv:1705.04319] 2017.
- [J11] **Consensus in networked multiagent systems under communication constraints and dynamically changing topologies**  
M. Komareji, Y. Shang, M. Chamanbaz & R. Bouffanais, Under Review, 2017.
- [J12] **Excess of social behavior reduces the capacity to respond to perturbations** pdf  
D. Mateo, Y. K. Kuan & R. Bouffanais, *Scientific Reports*, Under Review, 2017.
- [J13] **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, *Phys. Rev. E*, Under Review, 2017.
- [J14] **Two-dimensional electroacoustic waves in silicene**  
A. V. Zhukov, R. Bouffanais, N. N. Konobeeva, V. Gerasik & M. B. Belonenko, *Phys. Lett. A*, Under (minor) Revision, 2017.
- [J15] **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*, In Press, 2017.
- [J16] **Swarm-enabling technology for multi-robot systems** pdf, doi  
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, 2017.
- [J17] **Randomized Constraints Consensus for Distributed Robust Linear Programming** pdf, doi  
M. Chamanbaz, G. Notarstefano & R. Bouffanais, *IFAC*, In Press [arXiv:1706.00488] 2017.
- [J18] **Influence of the order parameter on the dynamics of ultrashort pulses in an environment with carbon nanotubes** pdf, doi  
A. V. Zhukov, R. Bouffanais, N. N. Konobeeva & M. B. Belonenko, *J. Appl. Phys.* (121), 084301, 2017.
- [J19] **Three-dimensional ultrashort optical Airy beams in an inhomogeneous medium with carbon nanotubes** pdf, doi  
A. V. Zhukov, R. Bouffanais, M. B. Belonenko & I. S. Dvuzhilov, *Phys. Lett. A* (381), 931, 2017.
- [J20] **Collision of three-dimensional bipolar optical solitons in an array of carbon nanotubes** pdf, doi  
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, 2016.  
Also selected for the Kaleidoscope Images of *Phys. Rev. A*, Nov 2016. web
- [J21] **Opto-acoustics effects in an array of carbon nanotubes** pdf, doi  
A. V. Zhukov, R. Bouffanais, N. N. Konobeeva & M. B. Belonenko, *J. Appl. Phys.* (120), 134307, 2016.
- [J22] **Interplay between signaling network design and swarm dynamics** pdf, doi  
A. Sekunda, M. Komareji & R. Bouffanais, *Network Science* (4), 244–265, 2016.
- [J23] **Peculiarities of the propagation of multidimensional extremely short optical pulses in germanene** pdf, doi  
A. V. Zhukov, R. Bouffanais, N. N. Konobeeva & M. B. Belonenko, *Phys. Lett. A* (380), 3117–3120, 2016.

- [J24] **Zitterbewegung near a Schwarzschild-type black hole** pdf, doi  
A. V. Zhukov, [R. Bouffanais](#), N. N. Konobeeva & M. B. Belonenko, *M. Phys. Lett. A* (**31**), 1650168, 2016.
- [J25] **Interplay between motility and cell-substratum adhesion in amoeboid cells** pdf, doi  
X. Zhu, [R. Bouffanais](#) & D. K. P. Yue, *Biomicrofluidics* (**9**), 054112, 2015.
- [J26] **Interaction of a two-dimensional electromagnetic pulse with an electron inhomogeneity in an array of carbon nanotubes in the presence of field inhomogeneity** pdf, doi  
A. V. Zhukov, [R. Bouffanais](#), H. Leblond, D. Mihalache, E. G. Fedorov & M. B. Belonenko, *Eur. Phys. J. D* (**69**), 242, 2015.
- [J27] **Two-dimensional extremely short electromagnetic pulses in a Bragg medium with carbon nanotubes** pdf, doi  
A. V. Zhukov, [R. Bouffanais](#), M. B. Belonenko, N. N. Konobeeva, Y. V. Nevzorova & T. F. George, *Eur. Phys. J. D* (**69**), 129, 2015.
- [J28] **Consensus reaching in swarms ruled by a hybrid metric-topological distance** pdf, doi  
Y. Shang & [R. Bouffanais](#), *Eur. Phys. J. B* (**87**), 294 2014.
- [J29] **Persistent cellular motion control and trapping using mechanotactic signaling** pdf, doi  
X. Zhu, [R. Bouffanais](#) & D. K. P. Yue, *PLoS one* (**9**), e105406, 2014.
- [J30] **Interaction of a two-dimensional electromagnetic breather with an electron inhomogeneity in an array of carbon nanotubes** pdf, doi  
A. V. Zhukov, [R. Bouffanais](#), E. G. Fedorov & M. B. Belonenko, *J. App. Phys.* (**115**), 203109, 2014.
- [J31] **Influence of multi-level impurities on the dynamics of ultrashort electromagnetic pulses in carbon nanotubes** pdf, doi  
A. V. Zhukov, [R. Bouffanais](#), N. N. Konobeeva, M. B. Belonenko & T. F. George, *Europhys. Lett.* (**106**), 37005, 2014.
- [J32] **Few-cycle optical pulses in a thin film of a topological insulator** pdf, doi  
A. V. Zhukov, [R. Bouffanais](#), M. B. Belonenko, N. N. Konobeeva & T. F. George, *Opt. Commun.* (**329**), 151–153, 2014.
- [J33] **Influence of the number of topologically interacting neighbors on swarm dynamics** pdf, doi  
Y. Shang & [R. Bouffanais](#), *Scientific Reports* (**4**), 04184, 2014.
- [J34] **Resilience and controllability of dynamic collective behaviors** pdf, doi  
M. Komareji & [R. Bouffanais](#), *PLoS one* (**8**), e82578, 2013.
- [J35] **Physical limits on cellular directional mechanosensing** pdf, doi  
[R. Bouffanais](#), J. Sun & D. K. P. Yue, *Phys. Rev. E* (**87**), 052716, 2013.
- [J36] **Three-dimensional electromagnetic breathers in carbon nanotubes with the field inhomogeneity along their axes** pdf, doi  
A. V. Zhukov, [R. Bouffanais](#), E. G. Fedorov & M. B. Belonenko, *J. Appl. Phys.* (**114**), 143106 2013.
- [J37] **On the electronic spectrum in curved graphene nanoribbons** pdf, doi  
A. V. Zhukov, [R. Bouffanais](#), N. N. Konobeeva & M. B. Belonenko, *JETP Lett.* (**97**), 400–403, 2013.
- [J38] **Study of the indirect exchange interaction in a strained graphene nanoribbon** pdf, doi  
A. V. Zhukov, [R. Bouffanais](#), A. V. Pak & M. B. Belonenko, *Physica B* (**419**), 62–65, 2013.
- [J39] **Propagation of extremely short pulses in a graphene-boron nitride bilayer** pdf, doi  
A. V. Zhukov, [R. Bouffanais](#), A. V. Pak & M. B. Belonenko, *Phys. Lett. A* (**377**), 564–566, 2013.
- [J40] **Computational Fluid Dynamics for Architectural Design** pdf, doi  
S. Kaijima, [R. Bouffanais](#), S. Naidu & K. Willcox, *Architectural Design* (**83**), Issue 2, 118–123, 2013.
- [J41] **Hydrodynamic object recognition using pressure sensing** pdf, doi  
[R. Bouffanais](#), G. D. Weymouth & D. K. P. Yue, *Proc. Roy. Soc. A* (**467**), 19–38, 2011.
- [J42] **Time-scale joint representation of DNS and LES numerical data** pdf, doi  
G. Courbebaisse, [R. Bouffanais](#), L. Navarro, E. Leriche & M. O. Deville, *Computers & Fluids* (**43**), 38–45, 2011.
- [J43] **Computational performance of a parallelized three-dimensional high-order spectral element toolbox** pdf, doi  
C. Bosshard, [R. Bouffanais](#), M. O. Deville, R. Gruber & J. Lätt, *Computers & Fluids* (**44**), 1–8, 2011.

- [J44] **Hydrodynamics of cell-cell mechanical signaling in the initial stages of aggregation** pdf, doi  
R. Bouffanais & D. K. P. Yue, *Phys. Rev. E* (**81**), 041920, 2010.  
 Also selected to appear in:  
*Virtual Journal of Biological Physics Research*, (**19**), Issue 9, May 2010. <http://www.vjbio.org>  
*Virtual Journal of Nanoscale Science and Technology*, (**21**), Issue 19, May 2010. <http://www.vjnano.org>  
 Also selected for the Kaleidoscope Images of *Phys. Rev. E*, April–May 2010. web
- [J45] **Advances and challenges of applied large-eddy simulation** pdf, doi  
R. Bouffanais, *Computers & Fluids* (**39**), 735–738, 2010.
- [J46] **Unsteady transitional swirling flow in the presence of a moving free surface** pdf, doi  
R. Bouffanais & D. Lo Jacono, *Phys. Fluids* (**21**), Art. 064107, 2009.
- [J47] **Transitional cylindrical swirling flow in presence of a flat free surface** pdf, doi  
R. Bouffanais & D. Lo Jacono, *Computers & Fluids* (**38**), 1651–1673, 2009.
- [J48] **Solution of moving boundary problems by the spectral element method** pdf, doi  
 N. Bodard, R. Bouffanais & M. O. Deville, *App. Num. Math.* (**58**), 968–984, 2008.
- [J49] **A coupled approximate deconvolution and dynamic mixed scale model for large-eddy simulation** pdf, doi  
 M. A. Habisreutinger, R. Bouffanais, E. Leriche & M. O. Deville, *J. Comput. Phys.* (**224**), 241–266, 2007.
- [J50] **Large-eddy simulation of the flow in a lid-driven cubical cavity** pdf, doi  
R. Bouffanais, M. O. Deville & E. Leriche, *Phys. Fluids*. (**19**), Art. 055108, 2007.
- [J51] **Mesh update techniques for free-surface flow solvers using spectral element method** pdf, doi  
R. Bouffanais & M. O. Deville, *J. Sci. Comput.* (**27**), 137–149, 2006.
- [J52] **Large-eddy simulation of the lid-driven cubic cavity flow by the spectral element method** pdf, doi  
R. Bouffanais, M. O. Deville, P. F. Fischer, E. Leriche & D. Weill, *J. Sci. Comput.* (**27**), 151–162, 2006.
- [J53] **Nonequilibrium electron interactions in metal films** pdf, doi  
 N. Del Fatti, R. Bouffanais, F. Vallée & C. Flytzanis, *Phys. Rev. Lett.* (**81**), 922–925, 1998.

## Refereed Proceedings Publications

- [P54] **Collision of 3D bipolar light pulses in an array of carbon nanotubes** pdf, doi  
 A. V. Zhukov, R. Bouffanais, B. A. Malomed, H. Leblond, D. Mihalache, E. G. Fedorov, N. N. Rosanov & M. B. Belonenko, *IEEE Int. Conf. Laser Optics (LO)*, St. Petersburg, 2016, pp. R8-69.
- [P55] **Three-dimensional extremely-short optical pulses in carbon nanotube arrays in the presence of an external magnetic field** pdf, doi  
 A. V. Zhukov, R. Bouffanais, M. B. Belonenko & E. N. Galkina, *Mod. Phys. Lett. B* (**30**), 1650405, 2016.
- [P56] **Excess of Social Activity Reduces the Responsiveness of Swarms** pdf, doi  
 D. Mateo & R. Bouffanais, *Int. J. Des. Nat. Ecodyn.* (**11**), 654–662, 2016.
- [P57] **Study of the indirect interaction in a non-Fermi liquid within the AdS/CFT correspondence framework** pdf, doi  
 A. V. Zhukov, R. Bouffanais, A. V. Pak & M. B. Belonenko, *Mod. Phys. Lett. B* (**29**), 1550181, 2015.
- [P58] **Physical Limits on Directional Mechanosensing of Amoeboid Crawling Cells** doi  
 X. Zhu & R. Bouffanais, *Biophys. J.* (**106**), 176a–177a, 2014.
- [P59] **Directional Mechanosensing of Amoeboid Cells** doi  
 X. Zhu, R. Bouffanais & D. K. P. Yue, *Biophys. J.* (**106**), 176a–177a, 2014.
- [P60] **Tunneling characteristics of a contact between a superlattice and non-Fermi liquid using the AdS/CFT correspondence** pdf, doi  
 M. B. Belonenko, N. N. Konobeeva, D. M. Smovzh, A. V. Zhukov & R. Bouffanais, *Mod. Phys. Lett. B* (**28**), 1450170, 2014.
- [P61] **Integrated 2D Design in the Curriculum: Effectiveness of Early Cross-Subject Engineering Challenges** pdf, doi  
 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*, Indianapolis (IN), pp. 24.763.1–24.763.18 June 15-18, 2014.

- [P62] **Controllability of a swarm of topologically interacting autonomous agents** pdf, doi  
M. Komareji & R. Bouffanais, *Int. J. Complex Systems in Science* (**3**), 11–19, 2013.
- [P63] **Propagation of laser beams in an array of semiconductor carbon nanotubes** pdf, doi  
A. V. Zhukov, R. Bouffanais, M. B. Belonenko & E. G. Fedorov, *Mod. Phys. Lett. B* (**27**), 1350045, 2013.
- [P64] **Computational Fluid Dynamics for Architectural Design** pdf, doi  
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 CAADRRIA*, (Eds. R. Stouffs, P. H. T. Janssen, S. Roudavski, B. Tunçer), Hong Kong, 169–178, 2013.
- [P65] **The Hall conductivity of a doped graphene in a quantizing magnetic field** pdf, doi  
M. B. Belonenko, A. V. Pak, A. V. Zhukov and R. Bouffanais, *Mod. Phys. Lett. B* (**26**), 125088, 2012.
- [P66] **Grid Filter Modeling for Large-Eddy Simulation** pdf, doi  
M.A. Habisreutinger, R. Bouffanais & M. O. Deville, In *Notes Num. Fluid Mech. and Multidisciplinary Design* (**110**), 159–165, 2010.
- [P67] **Wavelet analysis of turbulent LES data of the lid-driven cavity flow** pdf, doi  
R. Bouffanais, G. Courbebaisse, L. Navarro & M. O. Deville, In *Notes Num. Fluid Mech. and Multidisciplinary Design* (**110**), 87–94, 2010.
- [P68] **Computational performance of a parallelized 3D high-order spectral element toolbox** pdf, doi  
C. Bosshard, R. Bouffanais, C. Cléménçon, M. O. Deville, N. Fiétier, R. Gruber, S. Kehtari, V. Keller & J. Lätt, In *Lecture Notes in Computer Science* (**5737**), 323–329, 2009.
- [P69] **Grid filter models for large-eddy simulation** pdf, doi  
R. Bouffanais, M. A. Habisreutinger & M. O. Deville, In *Proc. Appl. Math. Mech.* (**7**), 1101203–1101204, 2007.
- [P70] **Large-eddy simulation of the flow in a lid-driven cavity using dynamic approximate deconvolution models** pdf, web  
R. Bouffanais, E. Leriche & M. O. Deville, In *Proc. 18<sup>th</sup> Congrès français de Mécanique, CFM’07*, Institut National Polytechnique Grenoble, 2007.
- [P71] **Simulation of standing waves using moving-grid techniques with spectral element methods** pdf, web  
R. Bouffanais & M. O. Deville, In *Proc. Int. Conf. Math. Num. Waves*, pp. 374–375, Brown University, Providence (RI), 2005.

## Other Publications

- [O72] **Swarming collapse under limited information flow between individuals** pdf  
M. Komareji, Y. Shang & R. Bouffanais, *Adaptation and Self-Organizing Systems*, [arXiv:1409.7207 [nlin.AO]], 2015.
- [O73] **Computational performance analysis of a high-order spectral and mortar element toolbox on commodity clusters** pdf, web  
R. Bouffanais, M. O. Deville, R. Gruber & V. Keller, *Computer Science Open Archive Arxiv.org*, [arXiv:0709.1024v1 [cs.DC]], 2007.
- [O74] **Simulation of shear-driven flows: transition with a free surface and confined turbulence** pdf, web  
R. Bouffanais, *Ph.D. thesis* (**3837**), École Polytechnique Fédérale de Lausanne. Schweizerische Nationalbibliothek NB 001515598, 2007.
- [O75] **Résolution des systèmes optiques et Maple** pdf, doi  
R. Bouffanais, *Bulletin de l’Union des Physiciens* (**831**), 1003–1013, 2001.

## GRANTS AND CONTRACTS

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### Funding Summary since June 2011

Funding Awarded	Amount in SGD
Total Amount	\$12,638,018
Total Individual Amount (PI and co-PI portions)	\$3,629,286

### As Principal Investigator (PI)

- Pr1** Cooperative Swimming of Microorganisms in a Fluid: Fellowship #PBELA-118718  
▷ Amount Awarded: USD\$60,000. Duration: 1 Year (Jan 2008-Jan 2009)  
Sponsor: Swiss National Science Foundation – Prospective Researcher Fellowship
- Pr2** Real-time Distributed Control and Design in Complex Systems Using Collective Intelligence: Grants #IDD-21100101A/#IDD-11100103A  
▷ Amount Awarded: USD\$670,600. Duration: 4 Years (Sep 2011-Aug 2015)  
Sponsor: SUTD-MIT International Design Center – Computation & Design
- Pr3** Mechanotactic Cell Signaling and Aggregation: Grant #SREP-11008  
▷ Amount Awarded: \$150,000. Duration: 3 Years (Jun 2011-May 2014)  
Sponsor: Ministry of Education and SUTD – Startup Research Grant
- Pr4** Procurement of a High-Performance Computing Cluster: Infrastructure Grants #30000436/#30000632  
▷ Total Amount Awarded: \$359,120. Financial Years 2012-2013  
Sponsor: SUTD-MIT International Design Center – Research Infrastructure
- Pr5** Procurement of a Fluorescence Microscopy Module for Inverted Microscope with Optical Table: Infrastructure Grant #SU-IDC-INFRA-Task-15  
▷ Total Amount Awarded: \$37,000. Financial Year 2013  
Sponsor: SUTD-MIT International Design Center – Research Infrastructure
- Pr6** Design of a Microfluid Device and Method for Measurement of Directed Cell Motility: Grant #IDG-31400104  
▷ Amount Awarded: \$100,616. Duration: 1 Year (Jun 2014-May 2015)  
Sponsor: SUTD-MIT International Design Center – Special Projects
- Pr7** Monitoring the Ocean Environment Using Large Numbers of Dynamic Cooperative Mobile Sensors: Grant #SMIG-14006  
▷ Amount Awarded: \$100,000. Duration: 1 Year (Nov 2014-Oct 2015)  
Sponsor: Singapore-MIT Alliance for Research and Technology – Pilot Project II
- Pr8** Social Dynamics in a Virtual Population of Heterogeneous Agents: Industrial Contract #IGEDF-1501  
▷ Contract Price: \$44,800. Duration: 6 months (2016)  
Sponsor: EDF Asian Center for Sustainable Cities
- Pr9** Dynamic and Cooperative Swarming of Mobile Sensors for Monitoring the Singapore Coastline and Reservoirs: Grant #MOE-T1-2015003  
▷ Amount Awarded: \$100,000. Duration: 2 Years (Jan 2016-Jan 2018)  
Sponsor: Ministry of Education – MOE Tier 1
- Pr10** Dynamic and Cooperative Swarming of Mobile Sensing Buoys for Monitoring the Singapore Coastline and Reservoirs: Grant #IGDSS-1501021  
▷ Amount Awarded: \$50,000. Duration: 1 Year (Oct 2015-Sep 2016)  
Sponsor: Ministry of Defence – Temasek Lab SEED Projects
- Pr11** Data-Driven Predictive Modeling of Passive Algal Blooms or Chemical Spills: Grants #SMIG-15003/#SMIG-16003  
▷ Amount Awarded: \$485,490 (+\$40K for travel/equip.). Duration: 2.5 Years (Jun 2015-Dec 2017)  
Sponsor: Singapore-MIT Alliance for Research and Technology – CENSAM IRG

## As Co-Principal Investigator (co-PI)

- Pr12** 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 Funding: \$75,000  
Sponsor: SUTD-MIT International Design Center – Special Projects
- Pr13** 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: 4 Years (Nov 2013-Oct 2017)  
▷ Individual Co-PI Funding: \$591,000 (\$411K: Autonomy + \$180K: Control).  
Sponsor: Ministry of Defence – Temasek Lab
- Pr14** 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 Funding: \$521,000  
Sponsor: National Research Foundation (NRF) – NCR Programme
- Pr15** Tools and Equipment for Imaging and Particle Image Velocimetry Studies: Infrastructure Grant #IDIN-16006 – Lead PI: Prof. Pablo Valdivia y Alvaro  
▷ Total Amount Awarded: \$304,660. Financial Year 2016  
Sponsor: SUTD-MIT International Design Center – Research Infrastructure

## **SUPERVISION & INDIVIDUAL STUDENT GUIDANCE**

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### Post-Doctoral Researchers

1. Dr. Vahid Hassani  
Postdoctoral Associate (Ph.D. Sharif University of Technology): Dec 2016–present
2. Dr. Jurriaan J. J. Gillissen  
Research Scientist (Ph.D. TU Delft: co-supervised with Prof. Dick K. P. Yue): Sep 2016–present
3. Dr. Wen Xin  
Postdoctoral Associate (Ph.D. NTU: co-supervised with Prof. Dick K.P. Yue): Nov 2015–Nov 2016
4. Dr. Mohammadreza Chamanbaz  
Postdoctoral Associate (Ph.D. NUS): Oct 2015–Mar 2017
5. Dr. Malik M Barakathullah  
Postdoctoral Associate (Ph.D. Indian Institute of Science): Oct 2015–Jun 2016
6. Dr. David Mateo  
Postdoctoral Associate (Ph.D. University of Barcelona): Jun 2013–present
7. Dr. Yilun Shang  
Postdoctoral Associate (Ph.D. Shanghai Jiao Tong): Feb 2012–Feb 2014
8. Dr. Alex V. Zhukov  
Postdoctoral Associate (Ph.D. Kharkov University): Jul 2012–Jun 2015
9. Dr. Mohammad Komareji  
Postdoctoral Associate (Ph.D. Aalborg University Denmark): Jun 2012–Dec 2014
10. Dr. Xiaoying Zhu  
SUTD–MIT Postdoctoral Fellow, Postdoctoral Associate (Ph.D. NUS): Sep 2011–May 2015
11. Dr. Jianmin Sun  
Postdoctoral Associate (Ph.D. University of Utah): Jan 2012–Jan 2013

### Ph.D. Students

1. Jabez Leong Kit – Ph.D. Candidate (B.Eng. EPD SUTD): Jan 2017–present
2. Nikolaj Horsevad Sørensen – Ph.D. Candidate (M.Sc. Aalborg University): Sep 2016–present
3. Thommen Karimpanal George – Ph.D. Candidate (Previously supervised by Prof. Erik Wilhelm): Sep 2016–present
4. Komal Agarwal – Ph.D. Candidate (B.Tech. VTU: First Class, co-supervised by Prof. Avinash Bajji): Jan 2016–present

5. Sreetej Lakkam – Ph.D. Candidate (M.Eng. NTU–TUM): Sep 2015–present
6. Yoke Kong Kuan – Ph.D. Candidate (M.Sc. University of Chicago): Sep 2013–present

### Research Assistants & Engineers

7. M. Zaki B. Djuanda – Research Engineer (B.Eng. SUTD: co-supervised with Prof. Dick K. P. Yue): Jan 2017–present
8. Manivannan Ajaykumar (Ajay) – Research Assistant (M.Sc. NTU-TUM): Nov 2016–present
9. Francesco Vallegra – Research Engineer (M.Sc. KTH Stockholm): May 2016–present
10. Chaitanya Ganesh – Research Assistant (LNM IIT, Jaipur): Jan 2016–present
11. Louis Goh Cheng Rong – Research Assistant (B.Eng. EE NUS): Sep 2015–present
12. Suresh Naidu – Research Engineer (M.Eng. ENSAE France): Oct 2011–Oct 2012

### Undergraduate & Master Students

- Summer 2017 Anthony Coutin – M.Eng. student (Polytech Paris – UPMC)
- Summer 2017 Amirhesam Abedsoltan – B.Eng. student (Sharif University of Technology, Iran)
- Summer 2017 Naman Goyal – Sophomore student (IIT Delhi)
- 2017 Nikita Surya – Final Year Project (Shiv Nadar University, India)
- 2016 Jatinder Goyal – Semester Project (PEC University of Technology, Chandigarh, India)
- 2016 Nguyen Van Duong – UTOP Student
- 2016 Abdullah Bin Rawshan – UTOP Student
- 2016 Manivannan Ajaykumar (Ajay) – Master’s thesis from NTU-TUM
- 2015 Nikolaj Sørensen – Visiting Master Student from Aalborg University (1 semester)
- Spring 2015 Michael Woo – Visiting B.Eng. Student (University of Waterloo, Canada)
- Summer 2014 Nhat V Cao – MIT Aero-Astro UROP (Prof. Karen Willcox)
- 2014 Jabez Leong Kit – UROP Student
- 2014 Nguyen Van Duong – UROP Student
- 2013 Chen Yuankang – UTOP Student (10.008 Bootcamp)
- 2013 Daniel Solomon Quake – Sembawang Greenwave Project: Finalist
- 2013 André Kradbup Sekunda – Visiting Master Student from Aalborg University (1 semester)
- Spring 2013 Christie Lin – MIT Graduate TA (10.008)
- Spring 2013 Lai Lipeng – MIT Graduate TA (10.008)
- 2012 Yiyao Li – UROP Student
- 2012 Hanwei Li – UROP Student
- 2012 Lisa Kwok – UROP Student
- 2012 Alister Lusuan – UROP Student
- 2011 Law Che Kun – SUTD Campus Builder
- 2011 Liza Ng – SUTD Campus Builder
- 2011 Leong Hei Kern – Singapore Polytechnique Intern
- Fall 2007 Christoph Boeckle – Semester project (EPFL–ME)
- Fall 2006 Michel Curina – Master’s Thesis co-supervised with Prof. M. O. Deville (EPFL–ME)
- Summer 2006 Christoph Boeckle – Internship (EPFL–ME)
- Spring 2006 Marc-Antoine Habisreutinger – Master’s Thesis co-supervised with Prof. M. O. Deville (EPFL–ME)
- Spring 2006 Michel Curina – Graduate project co-supervised with Prof. M. O. Deville (EPFL–ME)
- Fall 2005 Marc-Antoine Habisreutinger – Graduate project co-supervised with Prof. M. O. Deville (EPFL–ME)
- Spring 2005 Tryphon Antonakakis – Graduate project co-supervised with Prof. M. O. Deville (EPFL–ME)

## INVITED PRESENTATIONS

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- July 2017 IMFT Invited Seminar  
Institute of Fluid Mechanics, Toulouse, France
- June 2017 10th Annual CENSAM Workshop  
Marine: Integrated solutions for off-shore monitoring, modeling, and utilization
- January 2017 Interdisciplinary Theory Group  
Center for Quantum Technologies – NUS
- December 2016 Complexity Institute Seminar Series  
Nanyang Technological University
- June 2016 9th Annual CENSAM Workshop  
NUS Shaw Alumni Foundation – Joint talk with Prof. Dick K.P. Yue
- June 2016 IEEE RAS Summer School – Lecturer & Co-Organizer  
NUS/I2R
- June 2016 University of Southampton U.K.  
Department of Engineering and the Environment – Boldrewood Campus
- May 2016 Society for Underwater Technology (SUT) – Technical Meeting  
Singapore Branch – New Technologies Meeting – Park Royal Hotel
- May 2016 Resilient Systems Workshop  
Singapore-ETH FRS Center
- March 2016 NTU Winter School on Complexity – Invited Lecturer  
NTU Complexity Institute
- July 2015 University of Bordeaux  
CPU Cluster of Excellence Invited Talk, Bordeaux, France
- June 2015 8th Annual CENSAM Workshop  
Joint talk with Prof. Dick K.P. Yue, SMART, Singapore
- June 2015 SCy-Phy Systems 2015 International Workshop  
Presenter and Panelist (Control), Singapore
- April 2015 Singapore MIT Alliance for Research and Technology (SMART)  
CENSAM – Seminar Series on Marine Research, Singapore
- December 2014 Department of Mechanical Engineering  
Massachusetts Institute of Technology, Cambridge (MA)
- April 2014 Nanyang Technological University (NTU)  
School of Materials Science and Engineering, Singapore
- April 2010 National University of Singapore (NUS)  
Department of Mechanical Engineering, Faculty of Engineering, Singapore
- October 2009 Paul Scherrer Institut (PSI)  
Laboratory for Thermal Hydraulics, Villigen, Switzerland
- October 2009 Swiss Federal Institute of Technology Lausanne (EPFL)  
Laboratory of Fluid Mechanics and Instabilities, School of Engineering, Lausanne, Switzerland
- May 2009 The von Kármán Institute for Fluid Dynamics  
HPC with Spectral Element Methods (co-lecturer), Rhode-St-Genèse, Belgium
- May 2009 Scientific Computing Group Seminars, Division of Applied Mathematics  
Brown University, Providence (RI)
- March 2009 Department of Applied Mathematics, NMPDE, MIT, Cambridge (MA)
- October 2008 IBM Deep Computing Seminars, Zürich, Switzerland
- October 2008 Award Ceremony, Doctoral School, EPFL, Lausanne, Switzerland
- April 2008 Department of Civil & Environmental Engineering  
Massachusetts Institute of Technology, Cambridge (MA)
- October 2007 Royal Academy, ERCOFTAC Science Forum, Brussels, Belgium
- September 2007 Laboratoire CREATIS-LRMN UMR 5220, INSERM U 630, Lyon, France
- August 2007 Swiss Federal Institute of Technology, Continuing Education Lectures  
Parallelization of Spectral Element Methods (co-lecturer), Lausanne, Switzerland
- March 2007 Laboratoire TREFLE UMR 8508, Seminar ENSCPB Bordeaux, France
- November 2006 Physical Mathematics seminar, Massachusetts Institute of Technology, Cambridge (MA)
- November 2006 2006 Annual Meeting of the Leonhard Euler Center, European Research Community on  
Flow Turbulence and Combustion, EPFL, Lausanne, Switzerland
- October 2006 Conference of the Dutch-Flemish Numerical Analysis Communities  
Lecture Series on Numerical Analysis (co-lecturer), Woudschoten, The Netherlands
- July 2006 Center for Environmental and Applied Fluid Mechanics  
Johns Hopkins University, Baltimore (MD)

## CONFERENCE PRESENTATIONS

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July 2017	20 <sup>th</sup> World Congress of the International Federation of Automatic Control, Toulouse, France
June 2017	Int. Conf. on Computational Science (ICCS 2017) (Contributed Talk), Zürich, Switzerland
September 2016	Conference on Complex Systems (CCS'16) (2 Contributed Talks), Amsterdam, The Netherlands
July 2016	Complex Networks (Statphys 26), Marseille, France
June 2016	Conference on Complex Systems 2016 (1 Contributed Talk), Wessex Institute, New Forest, UK
September 2015	Conference on Complex Systems (CCS'15) (2 Contributed Talks), Tempe, AZ
June 2015	Int. Conf. on Computational Science (ICCS 2015) (Contributed Talk), Reykjavik, Iceland
January 2015	Directed Cell Migration (GRS) (Contributed Poster), Galveston (TX).
September 2014	European Conference on Complex Systems (ECCS'14) (Contributed Talk), Lucca, Italy
June 2014	International Conference on Computational Science (ICCS 2014) (Contributed Talk), Cairns, QLD
February 2014	58 <sup>th</sup> Annual Meeting of the Biophysical Society, San Francisco (CA) (2 contributed posters)
December 2013	Net-Works 2013, El Escorial, Spain (2 contributed talks)
November 2012	65 <sup>th</sup> Annual Meeting of the APS Division of Fluid Dynamics, San Diego (CA)
November 2011	64 <sup>th</sup> Annual Meeting of the APS Division of Fluid Dynamics, Baltimore (MD)
July 2011	8 <sup>th</sup> International Conference for Mesoscopic Methods in Engineering and Science, Lyon, France
November 2009	62 <sup>nd</sup> Annual Meeting of the APS Division of Fluid Dynamics, Minneapolis (MN)
June 2009	2 <sup>nd</sup> Conference on Turbulence and Interaction, Sainte-Luce, France
November 2008	61 <sup>st</sup> Annual Meeting of the APS Division of Fluid Dynamics, San Antonio (TX)
August 2007	18 <sup>th</sup> Congrès français de Mécanique, Grenoble, France
July 2007	6 <sup>th</sup> International Congress on Industrial and Applied Mathematics (ICIAM) Zürich, Switzerland
June 2007	7 <sup>th</sup> International Conference On High-Order And Spectral Method (ICOSAHOM) Chinese Academy of Sciences, Beijing, PRC
November 2006	59 <sup>th</sup> Annual Meeting of the APS Division of Fluid Dynamics, Tampa Bay (FL)
July 2006	Symposium on Advanced Numerical Methods in Engineering, Brussels, Belgium
May 2006	Conference on Turbulence and Interaction, Porquerolles, France
April 2006	Schweizer Numerik Kolloquium, Lausanne, Switzerland
July 2005	17 <sup>th</sup> IMACS World Congress on Scientific Computation Applied Mathematics and Simulation, Paris, France
June 2005	7 <sup>th</sup> International Conference on Mathematical and Numerical Aspects of Waves Brown University, Providence (RI)
June 2005	3 <sup>rd</sup> MIT Conference on Computational Fluid and Solid Mechanics Massachusetts Institute of Technology, Cambridge (MA)
June 2004	6 <sup>th</sup> International Conference On High-Order And Spectral Method (ICOSAHOM) Brown University, Providence (RI)

## PRESS COVERAGE & MEDIA ATTENTION

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- **Straits Times (Singapore)** – Friday 28 October 2011  
Interview with Students Madeline Wong & Raymond Te, Campus Builders – Mind-controlled Robot  
By Melissa Pang, Straits Times.
- **Straits Times (Singapore)** – January 26, 2016 web  
Experts' advice on what to do if trapped in a car underwater: "If you are trapped in a car underwater, your best course of action is to keep calm and wait for water to fill the car."  
By Linette Lai, Straits Times.
- **torque.com.sg** – February 2, 2016 web  
How to escape from a sinking car: "Experts say staying calm and keeping a window breaker tool in your vehicle can help you escape."
- **Channel NewsAsia (Singapore)** – November 7, 2016 web  
To beat traffic jams, learn from the swarm: "SINGAPORE: Ants, fish and amoeba all have something in common that humans dont - they can work perfectly in tandem to solve a common problem."  
By Steffi Koh, Channel NewsAsia.

## SERVICE

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### Peer Review Activity

- Reviewed for 4 organizations (see list below)  
*MacArthur Fellows Program, National Science Center (OSF, Poland), Austrian Science Fund (FWF), National Commission for Scientific Investigation (Fondecyt Chile)*
- In the top 2% of reviewers in the fields of Physical Sciences (according to [publons.com](http://publons.com) records) web
- Completed 149 verified pre-publication reviews (as of 20-05-2017 according to [ORCID](http://ORCID) and [publons.com](http://publons.com))
- Reviewed for 37 Journals (as of 20-05-2017 — see list below) and several International Conferences

–	<i>J. R. Soc. Interface</i>	–	<i>Open J. Fluid Dyn.</i>
–	<i>Swarm Intell.</i>	–	<i>Int. J. Num. Meth. Heat Fluid Flow</i>
–	<i>J. Fluid Mech.</i>	–	<i>App. Math. Model.</i>
–	<i>Automatica</i>	–	<i>Int. J. Num. Meth. Fluids</i>
–	<i>PLoS one</i>	–	<i>J. Para. Distri. Comput.</i>
–	<i>Int. J. Sys. Sci.</i>	–	<i>Int. J. Comput. Fluid Dyn.</i>
–	<i>Phys. Rev. E</i>	–	<i>Computers &amp; Chem. Eng.</i>
–	<i>R. Soc. Open Science</i>	–	<i>Beilstein J. Nanotech.</i>
–	<i>J. Comput. Phys.</i>	–	<i>J. Biomechanics</i>
–	<i>ACM Trans. Autonom. Adapt. Sys.</i>	–	<i>Opt. Commun.</i>
–	<i>IEEE Trans. Comput. Biol. Bioinf.</i>	–	<i>ACM Trans. Comput. Biol. Bioinf.</i>
–	<i>Computers &amp; Fluids</i>	–	<i>Math. Computers in Simulation</i>
–	<i>Phys. Fluids</i>	–	<i>Cognitive Computation</i>
–	<i>Eur. J. Control</i>	–	<i>Fluid Dyn. Res.</i>
–	<i>Comm. Comput. Phys.</i>	–	<i>Symmetry</i>
–	<i>J. Eng. Math.</i>	–	<i>MTS Marine Tech. Soc.</i>
–	<i>IEEE Trans. Ind. Elec.</i>	–	<i>Int. J. Num. Modeling</i>
–	<i>Chem. Sciences</i>	–	<i>J. NeuroInterventional Surgery</i>
–	<i>J. Fluid Struc.</i>	–	<i>Int. J. Comput. Meth. Eng. Sci. Mech.</i>
–	<i>Int. J. Heat. Fluid Flow</i>	–	<i>ASME-OMAE Conferences</i>
–	<i>Mod. Phys. Lett. B</i>	–	<i>ASEE Conferences</i>
–	<i>App. Num. Math.</i>	–	<i>Intl. Conf. Ocean, Offshore &amp; Artic Eng.</i>

### Other Professional Contributions

Sep 2017	MOOC “Introduction to Complexity” (NTU Complexity Institute) Lecture “Design and Control of Swarm Dynamics”
2016	IEEE-RAS Multi-Robot Systems Summer School (NUS & SUTD): Co-Organizer
2016	Program Committee – Conference on Complex Systems 2016 in Amsterdam (CCS2016): Member
2016	Satellite Session – Conference on Complex Systems 2016 in Amsterdam (CCS2016): Organizer
2013 – 2014	Technical Committee: International Unmanned Surface Vehicle Competition organized by MINDEF
2011 – present	Editorial Board Member: <i>Computers &amp; Fluids</i> , published by Elsevier
2014 – present	Marine Technology Society: Faculty Advisor of the MTS Singapore Chapter
2012	Palabos (open-source CFD software) Challenge: Jury Member

## Campus Contributions

2017 – present	SUTD Risk Management Working Committee – Market Positioning & Branding: Member/EPD Rep.
2017 – present	New Sub-Grade and GPA system: Member and EPD Representative
2016 – present	Faculty Research Computing Resources Committee: Member
2015 – present	EPD Curriculum Committee: Chairman
2015 – present	University Curriculum Committee (UCC): Member
2015 – 2016	National Supercomputing Center (NSCC) Implementation Taskforce: Member
2015 – 2016	HPC Pro Tem Committee: Member
2015 – present	IDC Computationally Intensive Design Lab (CIDL): Coordinator
2012 – present	EPD Recruitment Committee: Member
2012 – present	IDC High-performance Computing Platform Titan: Manager
2012 – present	Pillar Websites and Server Committee: Chairman
2012 – 2015	EPD IT Committee: Chairman
2012	Student Academic Integrity and Honor Code Committee: Member
2012	Cohort Classroom Advisor for SUTD Cohort 12F01
2012	SUTD Bookshop: ITQ and Faculty Feedback organizer
2011 – 2012	Ad-hoc Subject/Course Evaluation Committee (Led by Prof. Ricky Ang): Member
2011 – 2012	Learning Management System (Moodle) Committee: Member
2011	Library Digital Access Committee: Member
2011	SUTD HR Innovation Champions (Nominated in July 2011)
2014 – 2016	SUTD-MIT Dual Master Student Selection Committee: Member

## SOFTWARE DEVELOPMENT

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- **marabunta**: A Python library for the design and control of artificial swarms (developed by Dr. David Mateo, Postdoctoral Fellow in the Applied Complexity Group) **web**
- **openSPECULOOS**: open-source parallel spectral and mortar element toolbox in C++
  - Co-manager & Co-developer
  - Co-leader of the massively-parallel implementation on the IBM BlueGene/L and BlueGene/P **web**

## MEMBERSHIPS

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- IEEE Member: Control Systems Society & Robotics and Automation Society
- Complex Systems Society (CSS)
- Biophysical Society (BPS)
- American Association for the Advancement of Science (AAAS)
- American Physical Society: Division of Fluid Dynamics & Division of Computational Physics
- Marine Technology Society: Member & Chairman of the Singapore Chapter
- IMACS: Invited Member