

Curriculum vitae

Personal data:

Name: Mag. Dr. Thomas Schmickl

Date of birth: 20.10.1969 in Graz (Austria)

Citizenship: Austria

Family status: married, 3 children

Education:

2012: Habilitation thesis “*The Collective Physiology of the Swarm: Modelling Self-Organization, Self-Regulation and Swarm-Intelligence of Distributed Systems in Biology and Bio-Robotics*”.

1999 - June 2001: Doctorate in Zoology at the University of Graz, Austria, passed with distinction. Ph.-D. thesis: “*Regulation of brood development in the honeybee (Apis mellifera L.): Feedback mechanisms and survival strategies of a superorganism*”.

1989-1998: Master of Biology (Zoology & Biochemistry) at the University of Salzburg, Austria, passed with distinction. Master thesis: “*Die Erfassung des mikrobiologischen Status in der Innenraumluft von Krankenanstalten*”.

Positions:

Jan. 2013-now: Associate Professor at the Department for Zoology, Karl-Franzens-University Graz, Austria.

June 2012-Dec. 2012: Professorship as “Basler Chair of Excellence” at the East-Tennessee State University (ETSU), in Johnson City, TN, U.S.A.

Oct. 2007-June 2012: Full-time assistant professor (faculty position) at the Department for Zoology, Karl-Franzens-University Graz, Austria.

Sept. 2007: Lecturer at the University of Applied Sciences St. Pölten (Austria) in the course of studies “SimCom” (Computational Simulation, 1 month).

Jan. 2007 – Aug. 2007: Visiting Professor at the East Tennessee State University (Johnson City, USA), Biological Department in the program SYMBIOSIS, granted by the Howard Hughes Medical Institute (8 months).

Feb. 2006 - Feb. 2007: “Assistant Professor” at the Department for Zoology, Karl-Franzens-University Graz (1 year).

Mar. 2004 – Dec. 2006: Lecturer at the Karl-Franzens-University Graz in the course of study “Biology” as side-duty of my university contract.

Jan. 2004 – Feb. 2007: Post-Doc-position in the EU-funded project “Intelligent Small World Autonomous Robots for Micro-manipulation” EU IST-FET-open project (IP) ‘I-SWARM’, no. 507006.

Oct. 2003 – Dec. 2006: Lecturer at the Karl-Franzens-University Graz in the course of study “Sciences of Environmental Systems”.

Mar. 2003 – July 2006: Lecturer at the University of Applied Sciences St. Pölten (Austria) in the course of studies “SimCom” (Computational Simulation).

Mar. 2003 – Feb. 2004: External lecturer at the Karl-Franzens-University Graz in the course of study “Biology”.

Feb. 2003 – Jan. 2004: Post-Doc-position in the FWF-funded (Austrian Science Foundation) project “Self-Organization of working bees on a honeybee comb: Investigating and modeling the spatial distribution, regulation of tasks, working effort, communication of colony state and sharing of a collective memory among working honeybees”, Project-Nr.: P 15961-B06.

Sept. 2002 – Jan. 2003: Lecturer at the University of Applied Sciences St. Pölten (Austria) in the course of studies “SimCom” (Computational Simulation), teaching Biological Modelling and Simulation, Self-Organization of Biological Systems and Swarm-Intelligence (4 months).

Mar. 2002 – Jul. 2002: External lecturer at the Karl-Franzens-University Graz in the course of study “Biology”.

Aug. 2001 – Jan. 2002: Scientific assistant (6 months) for studies of social insects (FWF-funded position).

Feb. 2001 – Jul. 2001: Guest professor ship (6 months) at the Karl-Franzens-University Graz.

Sept. 2000: Programming of database application and statistical analysis of corporate data at the company “Foto Schmickl” in Graz (1 month)

Mar. 2000 – Mai 2000: Guest professorship (3 months) at the Karl-Franzens-University Graz.

1999: “Contract for labour” (“Werkvertrag”) to program a literature database for the Department for Zoology, Graz.

1996 - 1997: Software developer at the company "progressive software design" in Graz (15 months).

1995: Contract work at the company “grafomed” (Software Development) in Vienna (4 months)

1994: Employment as a member of the “production team” in a professional movie production of SATEL film for the Austrian Broadcasting Corporation (ORF, 2 months)

Additional Qualifications:

2008: 6 days of intensive training in “robot microcontroller programming” (with μ C-compiler) and “micro-robot assembly” at Dr. Kornienko, at the Institute for Parallel and Distributed Systems (IPVS), Stuttgart, Germany. (18.1.-23.1. 2008)

2006: 5 days of intensive training in “robot microcontroller programming” (with μ C-compiler) and “micro-robot assembly” at Dr. Kornienko, at the Institute for Parallel and Distributed Systems (IPVS), Stuttgart, Germany. (16.6.-20.6.06)

2002 - 2003: Teacher training in “eLearning” and “web-based teaching” at the University of Applied Sciences Joanneum, Graz (3 month course).

2002: Summer school at the European Forum Alpbach (Austria), granted by the “Club Alpbach Graz”. I applied to 2 courses: “Gaia-Theory: The earth as bio-geo-ecosystem” (by W. Wieser and S. Franck) and “Networks in Evolution” (by E. Szathmary and E. Jablonka).

2002: Teacher training in in “eLearning” and “web-based teaching” at the University of Graz (3-month course).

1999: Study visit ("stage") at the "Unité de Génétique Moléculaire Bactérienne de l'Institut Pasteur", Paris.

1998 – 2001: Foundation of my project ‘e:doc’, an open-source, multi-platform front-end for LaTeX, written in Perl/Tk, which was well renown in the Linux community and in the Perl/Tk community.

1998: "Certificate of Excellence" from Microsoft as "Microsoft Certified Professional".

1997: Teacher training "Teaching and learning in on-the-job-trainings" (WIFI, 80 hours course).

1997: "PC User" and "PC Administrator".

1996: "On-the-job training” in Delphi und Interbase by Borland International.

1989-2003: Part-time professional photographer at the company “Foto Schmickl”, Graz.

Grants, awards, sponsorships and scholarships:

2015-2019: Project coordinator (PC) and Principal investigator (PI) in the EU-funded Horizont 2020 project “subCULTRon” (funded € 3,987,650.75; individual contribution: € 901,300.--). FETPROACT-2-2014, project-no. 640967.

2015-2019: Principal investigator (Co-PI) in the EU-funded Horizont 2020 project “Flora Robotica” (funded 3,641,782.50€; individual contribution € 608,445.--), project-no. 640959

2015: Supervisor in the small-scale, small-term project “vibration experients”, funded by the FFG with € 1,000.-- in the funding program “young talents”.

2015: Supervisor in the small-scale, small-term project “robotic experiments 4”, funded by the FFG with € 1,000.-- in the funding program “young talents”.

2014: Supervisor in the small-scale, small-term project “robotic experiments 3”, funded by the FFG with € 1,000.-- in the funding program “young talents”.

2013: Supervisor in the small-scale, small-term project “shoaling behaviour”, funded by the FFG with € 1,000.-- in the funding program “young talents”.

2013: Supervisor in the small-scale, small-term project “temperature organ”, funded by the FFG with € 1,000.-- in the funding program “young talents”.

2013: Supervisor in the small-scale, small-term project “wall following behaviour”, funded by the FFG with € 1,000.-- in the funding program “young talents”.

2013-2018: Project coordinator (PC) and principal investigator (PI) in the EU-funded FP7-IP-project ASSISI_bf (funded € 6.00 Mio in total; individual contribution: € 1.7 Mio), project-no. 601074.

2014: Science-Award of the state of Styria 2013 in “Simulation & Modeling” in the subject “Basic research”.

2012: Supervisor in the small-scale, small-term project “robotic experiments 2”, funded by the FFG with € 1,000.-- in the funding program “young talents”.

2012: Supervisor in the small-scale, small-term project “behavioural analysis – part 2”, funded by the FFG with € 1,000.-- in the funding program “young talents”.

2012: Supervisor in the small-scale, small-term project “behavioural analysis – part 1”, funded by the FFG with € 1,000.-- in the funding program “young talents”.

2012-2014: Principal investigator in the FWF-funded project REBODIMENT (funding € 270,500.--), project-no. P23943-N13

2012: Mentoring award from the Ministry of Transport, Innovation and Technology (Ms. Doris Bures) for the FFG funded small-scale project “young talents”. With the mentored student (T. Kunzfeld) we achieved the highest grade for the mentored project by ending in the Top-20 across Austria.

2012: Visiting-professorship as “Chair of Excellence for the Integration of the Arts, Rhetoric, and Science” at the East-Tennessee State University (ETSU), in Johnson City, TN, U.S.A (6.5 months, funded US-\$ 65.800,-- by Wayne G. Basler)

2011: Supervisor in the small-scale, small-term project “robot experiments”, funded by the FFG with € 1,000.-- in the funding program “young talents”.

2011-2014: Project coordinator (PC) and Principal investigator (PI) in the EU project “CoCoRo” (funded 2,869,998.-- in total, 735,128.-- individual contribution). FP7-ICT project (Cognitive Systems and Robotics), project-no. 270382.

2010: Initiation financing for the proposal to the EU project CoCoRo. Funded with € 7.500,-- by the 'FFG: Forschungsförderungsgesellschaft', Austria.

2009-2013: Front-end financing ('Zusatzfinanzierung') for the EU-FP7 project "Symbrion" - Symbiotic Evolutionary Robot Organisms. Funded with € 38.700,00 by the 'Bundesministerium für Wissenschaft und Forschung', Austria.

2009-2013: Front-end financing ('Zusatzfinanzierung') for the EU-FP7 project "REPLICATOR". Funded with € 49.106,70 by the 'Bundesministerium für Wissenschaft und Forschung', Austria.

2009: Initiation financing for the proposal to the EU project MEDUSAS. Funded with € 15.000,-- by the 'FFG: Forschungsförderungsgesellschaft', Austria.

2008-2012: Principal investigator (Co-PI) in the EU project “SYMBRION” (funded € 554.000,-- by the 7th framework program of the European Union, IST-FET-Open).

2008-2012: Principal investigator (Co-PI) in the EU project “REPLICATOR” (funded € 686.000,-- by the 7th framework program of the European Union, ICT program).

2007-2010: Principal Investigator (PI) in the FWF-project “Temperature-induced aggregation of young honeybees: Individual behaviour vs. collective behaviour” (funded € 170.000,-- by the Austrian Science Foundation).

2007: “Visiting Professor” at the East Tennessee State University (8 months, funded US-\$ 30.800,-- by the program SYMBIOSIS, granted by the Howard Hughes Medical Institute).

2006: Granted € 3600,-- from the museum “Haus der Wissenschaften” to establish a robotic swarm installation.

2003: Scholarship for visiting the “European Forum Alpbach 2003” granted by the “IV” (“Industry Association of Austria”).

2002: Scholarship for visiting the “European Forum Alpbach 2002” granted by the “IV” (“Industry Association of Austria”).

2001: 6 month guest professorship (topic: bioinformatics, biomodelling) at the Karl-Franzens-University Graz (funded € 24.000,-- by the University of Graz).

2000: 3 month guest-professorship (topic: bioinformatics, biomodelling) at the Karl-Franzens-University Graz (funded € 12.000,-- by the University of Graz).

1999: Travel scholarship for presentation at the “APIMONDIA conference” in Vancouver, Canada, granted by the Major of Graz, Austria.

1999: Travel scholarship for presentation at the “APIMONDIA conference” in Vancouver, Canada, granted by the Styrian Governor.

1985: Awarded by the “Silver Diploma” for excellent results in the “Akademisches Gymnasium”, Graz, by the Styrian Governor.

Editorship:

- **Since 2013:** Editorial Board of “Frontiers in Invertebrate Physiology”
- **Since 2013:** Editor of the Journal “Swarm Intelligence”
- **Since 2014:** Editorial Board of “Frontiers in Evolutionary Robotics”.

Memberships:

- ⋈ International Society for the Study of Social Insects (IUSSI)
- ⋈ OEG (Entomological Society of Austria)
- ⋈ CEQUACOS (Center for Quantitative and Computational Sciences) → now “Forschungsschwerpunkt Modellierung & Simulation”.
- ⋈ ISAB (International Society for Adaptive Behavior)
- ⋈ INTERNATIONALSAR (International Society for Advanced Research)

Breaks in education:

1999-2000: One year of “paternity leave”.

1998-1999: One year of civil services at the Austrian “Red Cross” (obligatory in Austria).

Reviewing:

I reviewed articles for the following journals and books/scientific series:

<ul style="list-style-type: none"> ⤴ ACM Transactions on Autonomous and Adaptive Systems ⤴ Acta Biotheoretica ⤴ Adaptive Behavior ⤴ Advances in Complex Systems ⤴ Apiacta ⤴ Apidologie ⤴ Artificial Life ⤴ Artificial Intelligence ⤴ Bulletin of Mathematical Biology ⤴ Engineering Applications of Artificial Intelligence ⤴ Genetic Programming and Evolvable Machines ⤴ IEEE Transactions on Robotics ⤴ Insectes Sociaux ⤴ Intelligent Service Robotics ⤴ International Journal of Innovative Computing and Applications 	<ul style="list-style-type: none"> ⤴ Journal of Economic Entomology ⤴ Journal of Insect Behavior ⤴ Journal of Theoretical Biology ⤴ Mathematical and Computer Modelling of Dynamical Systems ⤴ Naturwissenschaften ⤴ Neural Computing and Applications ⤴ Proceedings of the Royal Society B ⤴ Proceedings of the Royal Society Interface ⤴ Robotica ⤴ Robotics ⤴ Springer Swarm Intelligence ⤴ Springer book “Symbiotic multi-robot organisms” (eds. Dr. S. Kernbach, Prof. P. Levi) ⤴ Transactions on Evolutionary Computation ⤴ Transactions on Robotics
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Program committee or scientific boards:

<ul style="list-style-type: none"> ⤴ MATHMOD 2009 (symposium chair) ⤴ IROS 2009 ⤴ ECAL 2009 ⤴ ANTS 2010 ⤴ CEC 2010 (main) ⤴ CEC 2010, WORKSHOP "Bio-inspired Self-Organizing Multi-Agent Systems" ⤴ DARS 2010 ⤴ CEC 2011 ⤴ ECAL 2011 ⤴ TAROS 2011 ⤴ BIONETICS 2011 (special session organizer) ⤴ IEEE CIS 2011 ⤴ MATHMOD 2012 ⤴ IEEE CIS 2012 ⤴ EURBEE 2012 ⤴ ALIFE 2012 ⤴ EvoApp 2013 ⤴ TAROS 2013 ⤴ IEEE CIS 2013 ⤴ BIOROB 2012 ⤴ GECCO 2012 (GDS track) ⤴ ANTS 2012 	<ul style="list-style-type: none"> ⤴ Living Machines 2012 ⤴ GECCO 2013 (Track chair of the Artificial Life, Evolutionary Robotics and Evolvable Hardware track) ⤴ Living Machines 2013 (Symposium "Emergent social behaviours in biohybrid societies") ⤴ ECAL 2013 ⤴ IROS 2013 ⤴ ALIFE 2014 ⤴ EvoRobot 2014 ⤴ Living Machines 2014 ⤴ GECCO 2014 (track chair ALIFE track) ⤴ IEEE CIS 2014 ⤴ IROS 2015 ⤴ ECAL 2015 ⤴ TAROS 2015 ⤴ EVOSTAR 2015 ⤴ EvoApps 2015 ⤴ GECCO 2015 (ALife track) ⤴ ANTS 2015 ⤴ Living Machines 2015 ⤴ EvoStar 2015 (EvoROBOT track) ⤴ IEEE CIS 2015 ⤴ BICT 2015 (special track on swarm robotics)
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European-level reviewing and consulting:

2011: Reviewer for grant proposals for the Swiss National Science Foundation (SNSF)

2011-today: Member of the advisory board of AWARENESS, a EU-funded Coordination Action (FP7)

2011: Member of the consultation board in the EU-FET-Proactive consultation "Living technologies", 10.11.2011, invitation by Dargmar Floeck. Leading to the calls FOCAS and ELEVIT

2011: Reviewer for the call FP7-ENV-2011-2.1.4-2 "Behaviour of ecosystems, thresholds and tipping points"

2011: Reviewer for the call FP7-ICT-2011-7 – ICT – Information and Communication Technologies - "Cognitive Systems and Robotics"

- 2011:** Consultation of Rothamsted Research & SYNGENTA in the UK-national project "Honeybee population dynamics: Integrating the effects of factors within the hive and in the landscape" on honeybee population modelling and honeybee behavioural modelling (2.11.2011, Bracknell, UK)
- 2010:** Consultant at the workshop "EVOBODY - New Principles of Unbound Embodied Evolution" in Malta, 23rd Sept. 2010.
- 2009:** Consultant at the EU FET proactive external consultation workshop "Fundamentals of collective adaptive systems". 3.-4. November 2009, Leuven, Belgium.

Organization and co-organization of scientific symposiums and meetings:

- 2015:** Workshop "Bioinspired Underwater Robotics" 2015, Hamburg, Germany, 02nd October 2015 at IROS 2015 Organizer: Cesare Stefanini & Thomas Schmickl
- 2015:** Symposium "Social Behaviour and Self-Regulation in Insects, Swarms and Algorithms" 2015, Graz, Austria, 08th September 2015 at DZG Organizer: Thomas Schmickl & Martina Szopek.
- 2014:** Symposium "Emergent social behaviours in bio-hybrid systems" at Living Machines 2014, Milano, Italy, 30th July – 1st August 2014 with Stuart Wilson & Jose Halloy
- 2013:** Symposium "Emergent social behaviours in bio-hybrid systems" at Living Machines 2013, London, UK, 29th July - 2rd August 2013 with Stuart Wilson & Jose Halloy
- 2012:** Symposium "Honeybee colony organization: from empirical studies to modeling approaches and technical applications" at the EURBEE 2012 (together with Dr. Matthias Becher)
- 2011:** Special Session "Self-adaptive and self-aware multi-component systems" at BIONETICS 2011 (together with Dr. Ronald Thenius)
- 2009:** Workshop "Agent connectivity: the role of cooperation in the regulation of the behavior of animals and robots" at ECAL 2009, Budapest, 13th - 16th September 2009. Organized together with Prof. Istvan Karsai, ETSU, USA.

2009: Symposium “Modeling the swarm” at MATHMOD 2009, Vienna 11th -13th February. Organized together with Dr. Heiko Hamann, University of Karlsruhe.

2005: Co-Organizing the symposium “Optimization and regulation of work in social insects” on the Third European Congress on Social Insects (IUSSE), St. Petersburg State University, 22nd to 27th of August 2005.

2005: "I-SWARM"-workshop at the EURON conference, February 16th - 18th 2005; Warsaw, Poland.

2004: Workshop “Modeling of biological swarms”. Participants: Scientists from universities in: Stuttgart (D), Karlsruhe (D), St. Ingbert (D), Lausanne (CH), Sheffield (UK), Kanpur (India) and Pisa (I), on May, 7th, 2004, Graz, Austria.

Invited lectures/talks:

2015: IROS 2015 (Hamburg, Germany, 2th Oct 2015): “Modular bio-inspired algorithms for autonomous underwater robot swarms in CoCoRo and subCULTron” in the workshop “Bioinspired underwater robotics” invited by Prof. Cesare Stefanini.

2015: DZG 2015 (Graz, Austria, 8th Oct. 2015): “Honeybee-inspired models and swarm (robotic) algorithms” in the workshop “Social Behaviour and Self-Regulation in Insects, Swarms and Algorithms”.

2015: “*subCULTron – Approaching the next level*”, EMRA`15 Conference, 18th – 19th June 2015, Lissabon, Portugal. Invitation by Prof. Nikola Miskovic, University of Zagreb

2015: Montagsakademie der Uni Graz. *Soziale Cyborgs : Maschinen und Lebewesen verschmelzen zu Super-Gesellschaften*. 4th May. 2015, Graz. Invitation by Prof. Alfred Posch

2015: subCULTron. Workshop “*European Robotics projects: Beyond the Robotics Unit*”, 11th March 2015, European Robotics Forum 2015, Vienna. Invitation by Anne Bajart, Olivier Da Costa, Cécile Huet – European Commission.

2015: Collective Cognitive Robotics (CoCoRo). Workshop “*Step change results from FP7 projects*”, 12th March 2015, European Robotics Forum 2015, Vienna. Invitation by Cécile Huet , Bjoern Juretzki , Franco Mastroddi – European Commission.

2015: Research overview of the Artificial Life Lab, Graz. At: KNAPP A.G., 6th March 2015. Invitation by Mag. Andreas Miller.

2015: Closing the loop between honeybees & robots in collective decision. At INDP Workshop „Social Insect Behaviour“ at Champalimaud Foundation, Lisbon, Portugal, 26th – 29th Jan. 2015. Invitation by Carolina Doran, Simone Lackner, Eugenia Chiappe, Gonzalo G. de Polavieja.

2014: Collective behaviors in honeybees: from observation to modeling to re-embodiment to bio-hybrid systems. Seminar at Université libre de Bruxelles (ULB). 17th Dec. 2014. Invitation by Prof. Jean-Louis Deneubourg.

2014: Der Bot im Schwarm: Wie Roboter und Gesellschaften zu einem völlig neuen homogenen Ganzen verschmelzen. TEDxGRAZ talk, 12th Nov. 2014. Invitation by Friso Schopper. <https://www.youtube.com/watch?v=eS4dyznbdc>

2014: Social Adaptation of Robots for Modulating Self-Organization in Animal Societies. FOCAS workshop at the SASO 2014 Conference, 8th - 12th Sept. 2015 at the Imperial College in London, UK. Invitation by Prof. Emma Hart and Jennifer Willies.

2014: Robots & honeybees: Establishing behavioural feedback loops between animals and machines. In: Symposium “Emergent social behaviours in bio-hybrid systems” at Living Machines 2014, Milano, Italy, 30th July – 1st August 2014. Invitation by Prof. Stuart Wilson.

2014: Evolving bio-hybrid societies of animals and robots. Opening Keynote at the EvoStar 2014 Conference at Granada, Spain 23-25 April. Invitation by Jennifer Willies and Prof. Emma Hart and Prof. J.J. Merelo.

2014: Evolvierende bio-hybride Gesellschaften. Akademie-Vortragsreihe “Digitale Gesellschaft: Erkennen – Manipulieren – Schützen – Produzieren“ of the Nordrhein-Westfälische Akademie der Wissenschaften und der Künste, Düsseldorf, Germany, 9th April 2014. Invitation by Prof. Franz Rammig.

2014: ASSISI_bf: Advocating bio-hybrid mixed societies of robots and animals. FET Proposers’ Day. 20th Jan. 2014, at DIAMANT Conference & Business Centre in Bruxelles. Invitation by Walter van der Velde, Christiane Wilzeck and Teresa De Martino.

2013: Schwarmintelligenz und bio-hybride Gesellschaften. Lecture at “Biologisches Kolloquium” at the University of Bonn. 2nd Dec. 2013. Invitation by Prof. Gerhard von der Emde.

2013: Embodied & collective intelligence in natural and artificial autonomous agents. Lecture at the “Informationskolloquium” of the Department of Computer Science, University of Paderborn. 12th Nov. 2013. Invitation by Junior-Prof. Dr. Heiko Hamann.

2013: The new Cyborgs: Robots and Animals Forming a Mixed Society? Lecture at the IEEE Croatian Section 2013 Lecture Series organized by Control Systems Chapter (CS23) and Robotics and Automation Chapter (RA24). 5th Nov. 2013 at University of Zagreb, LARICS, Invitation by Dr. Stjepan Bogdan.

2013: “Was Roboter von Tieren und BiologInnen von Robotern lernen können”. Vita Activa Vortragsreihe, University of Graz. 19th March 2013.

2013: "From biology & robots to bio-hybrid systems: establishing adaptive social cyborgs". Invited talk in the workshop "Emergent social behaviours in bio-hybrid systems" at Living Machines 2013, London, UK, 29th July - 2nd August 2013.

2013: “Collective artificial intelligence in autonomous embodied agents”. University of Manchester (U.K.) 19th June 2013. Invitation Dr. Alexandru Stancu.

2012: “Insects – Robots – Humans – Philosophy of the collective cognition: A journey through the mind of the masses”. 6th of September 2012. ETSU, USA.

2012: “What is the IQ of one ant or one simple robot? And what if there are more than one to take the test?” 10th of October 2012. ETSU, USA.

2012: “Terminator, Matrix and Star Wars: How (far) will robots develop in our lifetime?” 1st of November 2012. ETSU, USA.

2012: Invited lecture in the Department Seminar of the Department for Biology. 3rd of October 2012, ETSU, USA. Invitation by Dr. I. Karsai.

2012: Invited talk at the Seminar for the Institute for Quantitative Biology (IQB). 24th of October 2012. ETSU, USA. Invitation by Dr. Debra Knisley.

2012: Invited talk in at the class “Great Ideas in Science”. 29th of November 2012. ETSU, USA. Invitation by Dr. D.W. Harker and Dr. F.B. Hagelberg.

2012: Invited talk in the class “Modern drama” on swarm robots in theatre plays. 19h of November 2012. ETSU, USA. Invitation by Dr. K. Weiss.

2012: Round table on collective cognition and swarm intelligence”, 16th of November 2012, ETSU, USA. Invitation by Dr. Debra Knisley.

2012: Invited talk “From biological models to bio-inspired robots” at the University of Zagreb. 5th of April 2012, invitation by Prof. Stjepan Bogdan.

2012: “Collective Cognitive Robots” at the CogSys Conference 2012 (5th International Conference on Cognitive Systems), 23rd Feb. 2012, Vienna.

2011: Invited talk in the seminar of the Plant and Invertebrate Ecology Department at Rothamsted Research, Harpenden, UK on the 2nd November 2011. Title "Honeybees, robots and other living things" (invitation by Dr. Matthias Becher and Dr. Juliet Osborne).

2011: “Honeybees & robots: Collective decision making and coordination in autonomous swarm systems” in the "Artificial Intelligence Seminar" at the Information Sciences Institute, University of Southern California (invitation bei Wei-Min Shen)

2011: Demonstration (in presentation form) "Spatial computing in modular robotics" at the workshop "Spatial Computing" (10min) 3rd Oct. 2011, SASO 2011, Ann Arbor, MI, USA.

2011: “Simemould - a collective and distributed intelligence” in the course “Holistische Wissenschaften” (“holistic sciences”), LVA-No: 7771090, at the Universität für Bodenkultur (BOKU) Vienna, Austria (invited by Prof. Thomas Prohaska)

2010: Workshop: 2010 IEEE International Conference on Robotics and Automation, Anchorage, Alaska, May 3-8, 2010, Workshop on Bio-Inspired Self-Organizing Robotic Systems. Title: Bio-Inspiration and Artificial Evolution in Collective Robotics.

2010: Workshop of the Research Core Area “Modelling and Simulation”. Titel: Self-organized biological systems: Modelling, Simulation and Artificial Evolution.

2009: EU FET proactive external consultation workshop “fundamentals of collective adaptive systems“. Title: “Creating adaptive systems that are as rich as their natural counterparts? Challenges for Evolvability“. 3.-4. November 2009, Leuven, Belgium.

2009: Workshop/info-day “ICT on tour: Cognitive systems, Interaction, Robotics” of the FFG (Forschungsförderungsgesellschaft) Title: “Erfahrungsbericht aus dem RP7 "Replicator" oder die Biologie als Vorlage für robotische Kontrollarchitekturen“. TU Graz, 10.12.2009.

2008: Workshop "Cognitive Robotics" (26.6.08 Budapest), invited talk by George Kampis, Collegium Budapest. Title: "Why robots are suitable models for the research of swarm phenomena"

2008: Workshop on Modelling Complex Biological Systems, 17th-18th April 2008, Uppsala, Sweden. Organized by: David Sumpter. “Individual-based models of honeybee intra-colonial regulation: Task-selection, nutrient allocation, brood care and navigation”.

2007: “Complex Behavior: From honeybees to robot swarms”. Seminar of the Departments of Biological Sciences & Health Sciences, ETSU, Jonson City, TN, USA. (Seminar BIOL-5700, invited by the organizer Zulfiqar Ahmad)

2005: “Swarm Intelligence and Self-Organization in Biology”. Course Number 621.150, Seminar on Optimization and Control in Physiological Systems (for Mathematicians and Life Scientists) (2 hours of course credit) organized by: F. Kappel, T. Kenner, D. Schneditz, J. Batzel, D. Auerbach, M. Bachar, M. Fink. (Spezialforschungsbereich F-003) sponsored by the Austrian Science Fund, Graz, Austria.

2005: “Multi-Agentensimulation der dezentralen Regulation der Arbeitsteilung bei Honigbienen”, at the „2nd Day of science”, organized by CEQUACOS, Center for Quantitative and Computational Sciences, Graz, Austria.

2002: “Multiagenten Simulation in der Biologie”, at the “1st Day of Science”, organized by CEQUACOS, Center for Quantitative and Computational Sciences, Graz, Austria.

Teaching activities:

East Tennessee State University (ETSU), Johnson City, TN, USA:

2012: Course “Topics in Ecology and Evolution Dynamic Systems in Biology” (BIOL 4910-004/5300-002 and CSCI 4957/5957-003), 3 credits, fall semester 2012.

2012: Course “Artificial Life and Swarm Intelligence” (BIOL 4910-002/BIOL5910-002 or CSCI 4957/5947-004), 4 credits, fall semester 2012, co-teaching with Dr. I. Karsai.

2007: Guest lecturing one lecture “Ecology of Predator-Prey systems” and one lecture “Evolution of Predator-Prey systems” in the course “Complex Biological Systems” (BIOL-4017/5017 for biology and math undergraduate and graduate student; 3 credit hours)

2007: Guest lecturing two lectures “Ecology of Predator-Prey systems” in the course “Introduction to Quantitative Biology” (MATH/BIOL 2190; 3 credit hours).

Karl-Franzens-University Graz, Austria (Course of Study: Biology):

2010-2015: “Modelling biological systems” (lecture, 1.5 credit)

2010-2015: “Modelling biological systems” (2 courses à 1 credits)

2010-2015: “Modelling ecological systems and evolutionary processes (lecture, 0.5 credits)

2010-2015: “Modelling ecological systems and evolutionary processes (2.2 courses à 1.5 credits)

2010, 2014: “Artificial life and robotics” (lecture, 1 credit)

2010, 2014: “Artificial life and robotics” (course, 1.5 credit)

2009: “Modelling ecological and evolutionary processes (lecture, 1 credit)

2009: “Modelling ecological and evolutionary processes (course, 1.5 credits)

2008-2010: “Methods in the analysis of social systems” (1.5 credits)

2008-2009: “Modelling biological systems” (2 courses à 3 credits)

2003-2007: “Methods in the analysis of social systems” (1 credits)

2004-2006: “Modelling biological systems” (2 courses à 3 credits)

2002: “Modelling for biologists” (3 credits)

2001: “Modelling biological systems and analysis of biological data using standard methods” (2 credits)

2001: “Modelling and programming for biologists” (2 credits)

2000: “Modelling biological systems and analysis of biological data using standard methods” (2 credits)

Karl-Franzens-University Graz, Austria (Course of Study: Sciences of Environmental Systems):

2011-2015: “Seminar for Modelling of Systems” (2 credits per semester, 2 different courses)

2003-2010: “Modelling the environment and the effects of civilisation” (2 credits)

2003-2010: “Self-organisation in biological systems” (2 credits)

2003: “Global change” (1 credits)

University of Applied Sciences at St. Pölten-Austria (Studies: Industrial Simulation; SimCom (Computer simulation); Simulations and Telecommunications):

2010-2013: Multiagentensimulationen [seminar/workshop] (2 credits)

2010-2013: Multiagentensimulationen [lecture] (1 credit)

2009: Advanced topics in simulation I (2 credits)

2008-2009: Multiagentensimulationen II [seminar/workshop] (2 credits)

2008-2009: Multiagentensimulationen I [lecture] (1 credit)

2008: Advanced topics in simulation IV (1 credit)

2008: Advanced topics in simulation III (2 credits)

2007: Advanced topics in simulation II (1 credits)

2007: Advanced topics in simulation I (2 credits)

2004-2006: Advanced topics in simulation I (1 credits)

2004-2006: Advanced topics in simulation II (2 credits)

2004-2006: Advanced topics in simulation III (2 credits)

2004-2006: Advanced topics in simulation IV (1 credits)

2003: “Advanced topics of multi-agent modelling” (2 courses à 1.5 credits)

2003: “Introduction in dynamic systems” (2 courses à 0.5 credits)

2003: “Multi-agent projects” (2 courses à 1 credits)

2003: “Advanced topics in dynamic systems” (2 courses à 2 credits)

2003: “Introduction into self-organizational systems and multi-agent modelling” (1 credits)

2002: “Introduction into self-organizational systems and multi-agent modelling” (2 courses à 1 credits)

Exhibitions:

2015: EXPO 2015 “subCulTron underwater robot installation”, Venice, Italy (16.10.2015 – 31.10.2015)

2014: CeBit 2014, “CoCoRo underwater robot installation”, Hannover, Germany (10.03.2014 – 14.03.2015)

2014: Multiple live presentations of honeybee-inspired swarm robots. TEDxGRAZ talks, Graz, Old University, 12th Nov. 2014. Invitation by Friso Schopper.

2013: Live presentation of a robot swarm performing the honeybee-inspired robots at “Tag der Naturwissenschaften” at the Aula of the Karl-Franzens-University Graz (16.11.2013).

2010: Exhibition of our bio-robotic swarms at the “RESEARCH 2010” in Graz, Austria (11.6.-12.6.2010).

2010: Museum installation of a robotic implementation of a phosphorescent ant-trail system in the museum “Haus der Wissenschaften” at the exhibition named “Abenteuer Wissenschaft 3”, 24 performances.

2010: Theater performance of swarm robotic algorithms supervised/consulted by the AL-Lab Graz in the theatre play “2012 – Übermorgen is zweifelhaft” at the “Münchner Kammerspiele” by video-, performance- and theater-artist Chris Kondek (<http://www.youtube.com/watch?v=FERe9LfZl4>), 6 performances.

2006: Museum installation of a robots swarm (20 JASMINE robots) in the museum “Haus der Wissenschaften” at the exhibition named “Nobelpreisträger“, which was partially focused on the work and life of Nobel price winner Karl von Frisch.

Public media and arts:

My scientific work was covered by the following news coverage:

2015: TV-feature (12 min) on my projects ASSISIbf and REBODIMENT in the German Public Broadcasting agency KIKA (cooperation of ZDF and ARD): “Eine Zukunft für die Bienen” in the series “Erde an Zukunft”. (15.8.2015)

2015: Radio coverage “Bienen, Roboter, BEECLUST Algorithmus“, Radio „Dimensionen“ (23.06.2015)

2015: OE1 Radiokolleg (Austrian Broadcasting Agency, ORF) “Schwarmintelligenz - part 1” (32 min radio feature) on 28th July 2015.

2015: OE1 Radiokolleg (Austrian Broadcasting Agency, ORF) “Schwarmintelligenz - part 2” (20 min radio feature) on 30th July 2015.

2015: Article “Das CoCoRo-Projekt: Künstliche Schwarmintelligenz mit natürlichen Vorbildern”, roboterwelt.de, <https://www.roboterwelt.de/magazin/das-cocoro-projekt-kuenstliche-schwarmintelligenz-mit-natuerlichen-vorbildern/> (04.08.2015)

2015: Article “ L'intelligence collective sous-marine : le plus grand essaim est européen !”, H⁺ Robots, Drones, Intelligence Artificielle, <https://humanoides.fr/2015/05/lintelligence-collective-sous-marine-le-plus-grand-essaim-est-europeen/> (07.05.2015)

2015: Article “Underwater robots aim to mimic nature”, BBC-News,
www.bbc.com/news/technology-32819066 (01.06.2015)

2015: Article “Underwater robots aim to mimic nature”, BBC-News,
<http://newscodex.com/underwater-robots-aim-to-mimic-nature-bbc-news-8dcacb8902734e1c9ca421fb60580e47> (01.06.2015)

2015: Article “Underwater robots function like schools of fish”, Fox News,
www.foxnews.com/tech/2015/06/04/underwater-robots-function-like-schools-fish/
(04.06.2015)

2015: Radio feature “Swarms of robots are buzzing in Graz” in “Deutsche Welle”.
<http://www.dw.com/en/swarms-of-robots-are-buzzing-in-graz/av-18550064>

2015: Bild der Wissenschaften: “Picture of the week” with a picture of our CoCoRo swarm.

2015: Article “Roboterschwarm mit kollektivem Bewusstsein”, ABA,
<http://www.aba.gv.at/de/news/2015/06/roboterschwarm.php> (15.06.2015)

2015: Article “Fischroboter schwimmen autonom”, Die Presse (30.05.2015)

2015: Article “Fischroboter schwimmen autonom. Grazer Zoologen entwickeln
Fischschwarm aus Robotern“, Die Presse,
<http://diepresse.com/home/science/4742856/Fischroboter-schwimmen-autonom> (29.05.2015)

2015: Article “Ein Roboterfisch namens Jeff”, Berner Zeitung,
www.bernerzeitung.ch/wissen/technik/Ein-Roboterfisch-namens-Jeff/story/14313553
(29.05.2015)

2015: Article on my projects CoCoRo and subCULTron on roboterwelten.de: “Das CoCoRo-Projekt: Künstliche Schwarmintelligenz mit natürlichen Vorbildern”,
<http://www.robterwelt.de/magazin/das-cocoro-projekt-kuenstliche-schwarmintelligenz-mit-natuerlichen-vorbildern/>

2015: Article on my project CoCoRo on “humanoids.fr”: “L’intelligence collective sous-marine : le plus grand essaim est européen !”, <http://humanoides.fr/2015/05/lintelligence-collective-sous-marine-le-plus-grand-essaim-est-europeen/>

2015: Blog news post on my project CoCoRo on “Les industries technologiques”: “Le premier essaim de drones sous-marins intelligents !”, <http://www.les-industries-technologiques.fr/actualite/innovation/le-premier-essaim-de-drones-sous-marins-intelligents/>

2015: Article “COCORO: robot swarms use collective cognition to perform tasks”, Digital Agenda for Europa, <http://ec.europa.eu/digital-agenda/en/news/cocoro-robot-swarms-use-collective-cognition-perform-tasks> (27.05.2015)

2015: Article “The Year of CoCoRo Video #28/52: All magnet finding”, Robohub, <http://robohub.org/the-year-of-cocoro-video-2852-all-magnet-finding/> (14.07.2015)

2015: Article “Sichere Kommunikation Die entschlüsselte Cebit”, Frankfurter Allgemeine, <http://www.faz.net/aktuell/wirtschaft/cebit/sichere-kommunikation-die-entschlueselte-cebit-12838718.html> (14.07.2015)

2015: Article “The Year of CoCoRo Video #27/52: Jeff target find in a large pool”, Robohub, <http://robohub.org/the-year-of-cocoro-video-2752-jeff-target-find-in-a-large-pool/> (08.07.2015)

2015: Article “U-Boot-Roboter verhalten sich wie Fische”, Neue Luzerner Zeitung, www.luzernerzeitung.ch/nachrichten/panorama/panorama-sda/U-Boot-Roboter-verhalten-sich-wie-Fische;art46441,539992 (03.07.2015)

2015: Article “Robot-pesci per operazioni di ricerca e salvataggio”, key4biz, www.key4biz.it/robot-pesci-per-operazioni-di-ricerca-e-salvataggio-video/121188/(03.07.2015)

2015: Article “Miniature robot submarines named Jeff and Lily”, <http://jetsparkrobotics.com/miniature-robot-submarines-named-jeff-and-lily/> (01.07.2015)

2015: Article “The Year of CoCoRo Video #26/52: Magnetic target – four compartments” Robohub, <http://robohub.org/the-year-of-cocoro-video-2652-magnetic-target-four-compartments/> (30.06.2015)

2015: Article “The Year of CoCoRo Video #26/52: Magnetic target – four compartments“, www.softmachine.net/2015/06/the-year-of-cocoro-video-2652-magnetic-target-four-compartments/ (30.06.2015)

2015: Article “Collective cognition allows 3D printed CoCoRo small robots to perform various tasks”, 3D Printing from Scratch,
<http://3dprintingfromscratch.com/2015/06/collective-cognition-allows-3d-printed-cocoro-small-robots-to-perform-various-tasks/> (22.06.2015)

2015: Article “The Year of CoCoRo Video #25/52: Autonomous underwater camera agent”, Robohub, <http://robohub.org/the-year-of-cocoro-video-2552-autonomous-underwater-camera-agent/> (22.06.2015)

2015: Article “Community of Robots Under Water Interacting with Each Other”, gemnews.tv, <http://gemnews.tv/community-of-robots-under-water-interacting-with-each-other/> (20.06.2015)

2015: Article “The Year of CoCoRo Video #24/52: Jeff robots explore”, Robohub, <http://robohub.org/the-year-of-cocoro-video-2452-jeff-robots-explore/> (19.06.2015)

2015: Article “The Year of the CoCoRo Video #23/52: Lily aggregation experiments”, Robohub, <http://robohub.org/the-year-of-the-cocoro-video-2352-lily-aggregation-experiments/> (15.06.2015)

2015: Article “3D printed CoCoRo underwater mini-robots use collective cognition to perform tasks”, 3D printer and 3D printing news, <http://www.3ders.org/articles/20150606-3d-printed-cocoro-underwater-mini-robots-use-collective-cognition-to-perform-tasks.html> (06.06.2015)

2015: Article “Underwater Robots Function like Schools of Fish”, ROFFS, www.roffs.com/2015/06/underwater-robots-function-like-schools-of-fish/ (04.06.2015)

2015: Article “Underwater robots function like schools of fish”, Local News 7, <http://www.localnews7.com/technology/underwater-robots-function-like-schools-of-fish-h172931.html> (04.06.2015)

2015: Article “Underwater robots function like schools of fish”, Daily Times, <http://worlddailytimes.info/latest/underwater-robots-function-like-schools-of-fish/174345> (04.06.2015)

2015: Article “Underwater robots function like schools of fish”, Daily News,
<http://newsinday.com/latest/underwater-robots-function-like-schools-of-fish/174345>
(04.06.2015)

2015: Article “Underwater robot swarms use collective cognition to perform tasks”, Tsepa,
<http://www.tsepa.com/underwater-robot-swarms-use-collective-cognition-to-perform-tasks/>
(04.06.2015)

2015: Article “CoCoRo Underwater Mini-Robots School Like Fish and Share Knowledge”,
scoop it, <http://www.scoop.it/t/biomimicry> (02.06.2015)

2015: Article “Robot Swarms Use Collective Cognition to Perform Tasks”, Product, Design
and Development, <http://www.pddnet.com/news/2015/06/robot-swarms-use-collective-cognition-perform-tasks> (02.06.2015)

2015: Article “The Year of the CoCoRo Video #22/52: Aggregation magnets”, Robohub,
<http://robohub.org/the-year-of-the-cocoro-video-2252-aggregation-magnets/> (01.06.2015)

2015: Article “VIDEO: Underwater Robots Mimic Fish Behavior”, Awesome Ocean,
<http://www.awesomeocean.com/2015/06/01/underwater-robots-mimic-fish-behavior/>
(01.06.2015)

2015: Article “Underwater robots aim to mimic nature”, Soko Lako,
<http://sokolako.com/underwater-robots-aim-to-mimic-nature/> (01.06.2015)

2015: Article “Enjambres de robots que se comportan como un banco de peces”,
desdelaplaza.com, <http://www.desdelaplaza.com/urbania/enjambres-de-robots-que-se-comportan-como-un-banco-de-peces/> (01.06.2015)

2015: Article “Underwater robots aim to mimic nature” Milton Daniels Bishop,
<http://miltondaniels.blogspot.co.at/2015/06/underwater-robots-aim-to-mimic-nature.html>
(01.06.2015)

2015: Article “Underwater Inspection and Maintenance”, Sparc, <http://sparc-robotics.eu/inspection-robots-in-the-north-sea/> (30.05.2015)

2015: Article “Underwater Robot Swarms Function Like Schools of Fish”, AZO Robotics,
<http://www.azorobotics.com/News.aspx?newsID=7262> (30.05.2015)

2015: Article „EU-Forscher haben sie entwickelt: U-Boot-Roboter verhalten sich wie Fische“, Nos Villes en Suisse, <http://nosvilles.ch/2015/05/29/eu-forscher-haben-sie-entwickelt-u-boot-roboter-verhalten-sich-wie-fische/> (29.05.2015)

2015: Article “U-Boot-Roboter verhalten sich wie Fische“, Blick.ch, www.blick.ch/life/wissen/eu-forscher-haben-sie-entwickelt-u-boot-roboter-verhalten-sich-wie-fische-id3808534.html (29.05.2015)

2015: Article „Unterwasser-Roboter verhalten sich wie Fischschwärme“, swissinfo.ch, <http://www.swissinfo.ch/ger/alle-news-in-kuerze/unterwasser-roboter-verhalten-sich-wie-fischschwaerme/41458618> (29.05.2015)

2015: Article“ COCORO: Roboterschwärme lösen Aufgaben durch kollektives Bewusstsein, Computerwelt, www.computerwelt.at/news/wirtschaft-politik/forschung-wissenschaft/detail/artikel/111264-cocoro-roboterschwaerme-loesen-aufgaben-durch-kollektives-bewusstsein/ (29.05.2015)

2015: Article “Underwater Robot Swarms Use Collective Cognition To Perform Tasks”, Institution of Mechanical Engineers, www.imeche.org/news/engineering/underwater-robot-swarms-use-collective-cognition-to-perform-tasks-29051501, (29.05.2015)

2015: Article “COCORO: Roboterschwärme lösen Aufgaben durch kollektives Bewusstsein”, Computerwelt, www.computerwelt.at/news/wirtschaft-politik/forschung-wissenschaft/detail/artikel/111264-cocoro-roboterschwaerme-loesen-aufgaben-durch-kollektives-bewusstsein/?utm_source=news&UTM_medium=RSS (29.05.2015)

2015: Article “Unterwasser-Roboter verhalten sich wie Fischschwärme”, 1815.ch, www.1815.ch/news/vermishtes/wissen/unterwasser-roboter-verhalten-sich-wie-fischschwaerme-20150529122940/ (29.05.2015)

2015: Article “Ein Roboterfisch namens Jeff”, Tagesanzeiger, www.tagesanzeiger.ch/wissen/technik/Ein-Roboterfisch-namens-Jeff/story/14313553 (29.05.2015)

2015: Article “COCORO: DES ESSAIMS DE ROBOTS EXÉCUTENT DES TÂCHES GRÂCE À LA COGNITION, infohightech, www.infohightech.com/cocoro-des-essaims-de-robots-executant-des-taches-grace-a-la-cognition/ (29.05.2015)

2015: Article “Proyecto Cocoro crea robots inteligentes”,
www.redconcienciaargentina.info/2015/05/proyecto-cocoro-crea-robots-inteligentes.html
(29.05.2015)

2015: Article “COCORO: robot swarms use collective cognition to perform tasks”,
innovation, <http://www.innovationtoronto.com/2015/05/cocoro-robot-swarms-use-collective-cognition-to-perform-tasks/> (29.05.2015)

2015: Article “Roboter im Schwarm”, Bild der Wissenschaft, www.wissenschaft.de/bild-der-woche/-/journal_content/56/12054/6783280/ (28.05.2015)

2015: Article „CoCoRo underwater mini-robots school like fish and share knowledge”,
<http://www.banzaigeek.com/cocoro-underwater-mini-robots-school-like-fish-and-share-knowledge/> (28.05.2015)

2015: Article “COCORO: Roboterschwärme lösen Aufgaben durch kollektives Bewusstsein”,
viralnewschart, <http://app.viralnewschart.com/News/News.aspx?linkId=111985190>
(28.05.2015)

2015: Article “CoCoRo underwater mini-robots school like fish and share knowledge”,
gizmag, www.gizmag.com/underwater-cocoro-schooling-robots/37770/ (28.05.2015)

2015: Article “Progetto CoCoRo Negli Oceani Sciami Robot Per Missioni Di Ricerca: I
Video”, ingegneri, www.ingegneri.cc/progetto-cocoro-negli-oceani-sciami-robot-per-missioni-di-ricerca-i-video.html (28.05.2015)

2015: Article “Roboterschwärme mit kollektivem Bewusstsein”, dotnet pro,
www.dotnetpro.de/dotnetpronews5906.aspx (28.05.2015)

2015: Article “COCORO: enjambres de robots que se valen del conocimiento colectivo para
cumplir tareas”, alef, <http://alef.mx/cocoro-enjambres-de-robots-que-se-valen-del-conocimiento-colectivo-para-cumplir-tareas/> (28.05.2015)

2015: Article “COCORO: robot swarms use collective cognition to perform tasks”, CORDIS
http://cordis.europa.eu/result/rcn/165208_en.html (28.05.2015)

2015: Article “CoCoRo underwater mini-robots school like fish and share knowledge”, Latest
Technology News, <http://techzlatest.blogspot.co.at/2015/05/cocoro-underwater-mini-robots-school.html> (28.05.2015)

2015: Article “CoCoRo underwater mini-robots school like fish and share knowledge”, truemag, <http://scottbriscoe.com/2015/05/28/cocoro-underwater-mini-robots-school-like-fish-and-share-knowledge/> (28.05.2015)

2015: Article “Robot swarms use collective cognition to perform tasks”, Demanjo, www.demanjo.com/news/science/1855660/robot-swarms-use-collective-cognition-to-perform-tasks.html (28.05.2015)

2015: Article “Underwater robot swarms use collective cognition to perform tasks”, Science Daily, <http://www.sciencedaily.com/releases/2015/05/150528083639.htm> (28.05.2015)

2015: Article “Robot swarms use collective cognition to perform tasks”, Phys Org, <http://phys.org/news/2015-05-robot-swarms-cognition-tasks.html#nRlv> (28.05.2015)

2015: Article “Robot swarms use collective cognition to perform tasks”, All of Nothing, <http://allofnothing.org/index.php/2015/05/28/robot-swarms-use-collective-cognition-to-perform-tasks/> (28.05.2015)

2015: Article “Autonomous Robot Swarms Use Collective Cognition, are Aware of their Environment”, Scientific Computing, <http://www.scientificcomputing.com/news/2015/05/autonomous-robot-swarms-use-collective-cognition-are-aware-their-environment> (28.05.2015)

2015: Article “EU-Projekt aus Graz schuf Roboterschwarm mit kollektivem Bewusstsein”, Science APA, https://science.apa.at/rubrik/natur_und_technik/EU-Projekt_aus_Graz_schuf_Roboterschwarm_mit_kollektivem_Bewusstsein/SCI_20150527_SCI39391351423646398 (27.05.2015)

2015: Article “Geslaagde test met autonome onderwaterrobot Jeff”, Technologie Blog, <http://technologieblog.info/geslaagde-test-met-autonome-onderzee-robot-jeff/> (26.05.2015)

2015: Article “The Year of the CoCoRo Video #21/52: Jeff docking Livorno”, Robohub, <http://robohub.org/the-year-of-the-cocoro-video-2152-jeff-docking-livorno/> (25.05.2015)

2015: Article “The Year of the CoCoRo Video #20/52: Autonomous docking with Jeff robots”, Robohub, <http://robohub.org/the-year-of-the-cocoro-video-2052-autonomous-docking-with-jeff-robots/> (22.05.2015)

2015: Article “The Year of CoCoRo Video #25/52: Autonomous underwater camera agent”, Robohub, <http://robohub.org/the-year-of-cocoro-video-2552-autonomous-underwater-camera-agent/> (22.05.2015)

2015: Article “The Year of CoCoRo Video#12/52: Fun with Jeff in the pool”, Robohub, <http://robohub.org/the-year-of-cocoro-video1252-fun-with-jeff-in-the-pool/> (22.05.2015)

2015: Article “Субмарина, в составе которой действует 41 миниатюрный робот, в скором времени покорит водоемы”, Master City, <http://i.mastercity.ru/news/submarina-v-sostave-kotoroj-dejstvuet-41-miniatorynyj-robot-v-skorom-vremeni-pokorit-vodoemy-3> (21.05.2015)

2015: Article „The Year of the CoCoRo Video #19/52: Electric confinement in the harbour”, Robohub, <http://robohub.org/the-year-of-the-cocoro-video-1952-electric-confinement-in-the-harbour/> (20.05.2015)

2015: Article “CoCoRo - самая многочисленная на сегодняшний день группа из разнотипных субмарин-роботов, действующих как единое целое”, Daily Tech Info, www.dailytechinfo.org/robots/7012-cocoro-samaya-mnogochislennaya-na-segodnyashniy-den-gruppa-iz-raznotipnyh-submarin-robotov-deystvuyuschih-kak-edinoe-celoe.html (18.05.2015)

2015: Article „The CoCoRo (Collective Cognitive Robotics) Project is working with miniature underwater robots to create an AUV swarm”, The Drone Info, <http://www.thedroneinfo.com/2015/05/16/the-worlds-biggest-miniature-auv-swarm/> (16.05.2015)

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2015: Article “L'intelligence collective sous-marine : le plus grand essaim est européen ! ”,
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<http://www.eejournal.com/archives/fresh-bytes/worlds-largest-swarm-of-miniature-robot-submarines/#sthash.ha3ReT7l.dpuf> (05.05.2015)

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2015: Article “CoCoRo provides new details about its possible applications in autonomous underwater”, UNLOCK PWD, www.unlockpwd.com/cocoro-provides-new-details-about-its-possible-applications-in-autonomous-underwater/ (01.05.2015)

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Publications

Theses:

Habilitation thesis: **Schmickl T. (2012)** “*The Collective Physiology of the Swarm: Modelling Self-Organization, Self-Regulation and Swarm-Intelligence of Distributed Systems in Biology and Bio-Robotics*”, Karl-Franzens University Graz.

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4. Hahshold S., Radspieler G., Szopek M., Thenius R., **Schmickl T.**, Crailsheim K. (2010) Robuste Gruppenentscheidungen bei Honigbienen, in: *Entomologica Austriaca* 17, 125 - 126.
5. **Schmickl T.**, Thenius R. Möslinger Ch., Crailsheim K. (2009) Bio-Inspiration als Weg zu intelligenten Roboterschwärmen. *Entomologica Austriaca* 16, 154-155.
6. Szopek M., Radspieler G., Thenius R., **Schmickl T.**, Crailsheim K. (2009). Verhalten junger Honigbienen in zweidimensionalen Temperaturgradienten. *Entomologica Austriaca* 16, 151-152.
7. **Schmickl T.**, Thenius R., Crailsheim K. (2006) Kollektive Sammelentscheidungen: eine Multi-Agenten-Simulation einer Honigbienenkolonie. *Entomologica Austriaca* 13, 15-24. ISSN 1681-0406.

8. Thenius R., *Schmickl T.*, Crailsheim K. (2006) Einfluß der Individualität bei Sammelbienen (*Apis mellifera* L) auf den Sammelerfolg. *Entomologica Austriaca* 13, 25-29. ISSN 1681-0406.
9. *Schmickl T.* (2005) Mathematische Modellierung der Populationsdynamik eines Bienenvolkes. *Entomologica Austriaca* 12, 6-12, ISSN 1681-0406.
10. Crailsheim K., Thenius R., *Schmickl T.* (2004) Ottimizzazione della raccolta del nettare nelle api. *APOidea* 1: 5-11. ISSN 1724-8167. ("Optimisation of nectar foraging in honeybees").
11. Crailsheim K., *Schmickl T.* (2002) Was fressen Bienen bei schlechtem Wetter? *Deutsches Bienen Journal* 7: 4-6. ISSN 0943-2914. ("What do honeybees eat in times of bad weather?").
12. *Schmickl T.*, Crailsheim K. (2001) Brutkannibalismus bei Honigbienen (*Apis mellifera carnica*) - Wie Honigbienen die Größe ihres Brutnestes bei längeren Schlechtwetterperioden regulieren. *Entomologica Austriaca* 2, 10-11.

Invited papers, position papers, editorials:

1. *Schmickl T.* (2011) Unmasking 5 common rumors on artificial collective adaptive systems. Position paper at: Consultation workshop "living technology / artificial systems / embodied evolution", 10th Nov. in Brussels (FET Proactive).
2. Halloy J., Kernbach S., *Schmickl T.* (2011) Towards mixed societies of animals and robots. Position paper at: Consultation workshop "living technology / artificial systems / embodied evolution", 10th Nov. in Brussels (FET Proactive).
3. Hamann H., *Schmickl T.* (2011) Modelling the swarm: Analysing biological and engineered swarm systems. Editorial of the special issue "Modelling the Swarm" in *Mathematical and Computer Modelling of Dynamical Systems*, 2011, Taylor & Francis. DOI: 10.1080/13873954.2011.601426.
4. Kernbach S., *Schmickl T.*, Timmis J. (2009) Collective Adaptive Systems: Challenges Beyond Evolvability. Position paper at the FET external consultation "Fundamentals of collective adaptive systems", Brussels, 3rd-4th Nov. 2009.

5. **Schmickl T.**, Kernbach S. (2009): Creating adaptive systems that are as “rich” as their natural counterparts? Challenges for Evolvability. Position paper at the FET external consultation “Fundamentals of collective adaptive systems”, Brussels, 3rd-4th Nov. 2009.

Abstracts, short papers and letters in peer-reviewed journals:

1. Zahadat P., Hamann H., **Schmickl T.** (2015) Evolving Diverse Collective Behaviors Independent of Swarm Density, In: Workshop Evolving Collective Behaviors in Robotics, GECCO 2015 Proceedings.
2. Szopek M., Hahshold S., Thenius R., Bodi M., Crailsheim K., **Schmickl T.** (2014) ASSISIBf: Honeybees and robots form a bio-hybrid society. *Entomologica Austriaca* 21, 242-243.
3. Szopek M., Hahshold S., Thenius R., **Schmickl T.**, Crailsheim K., (2012) How social cues influence collective decisions in honeybees. In: *Apidologie* 42, 786-787.
4. Hahshold S., Radspieler G., Thenius R., **Schmickl T.**, Crailsheim K. (2010) Cooperative thermotaxis in honeybees: social gradient vs. temperature gradient. *Apidologie* 41, 686-687.
5. Szopek M., Radspieler G., Thenius R., **Schmickl T.**, Crailsheim K. (2010) Cooperative thermotaxis in honeybees: flexible group behaviour in a dynamic environment. In: *Apidologie* 41, pp. 687.
6. Radspieler G., Szopek M., Hahshold S., Thenius R., **Schmickl T.**, Crailsheim K. (2010) Analysis of honeybee locomotion behaviour. In: *Apidologie* 41, pp. 686.
7. Szopek M., Radspieler G., Thenius R., **Schmickl T.**, Crailsheim K. (2009) Cooperative thermotaxis in honeybees: Group decisions in a complex temperature gradient. In: *Apidologie* 40, pp. 663
8. Szopek M., Radspieler G., Thenius R., **Schmickl T.**, Crailsheim K. (2009). Verhalten junger Honigbienen in zweidimensionalen Temperaturgradienten. *Entomologica Austriaca* 16 , 154-155

9. Hahshold S., Radspieler G., Thenius R., **Schmickl T.**, Crailsheim K. (2009) Cooperative thermotaxis in honeybees: How robust are group decisions? In: *Apidologie* 40, pp. 51 - 670
10. Vollmann J., Thenius R., **Schmickl T.**, Crailsheim K. (2009) Contact-free age determination of honeybee larvae (*Apis mellifera*). In: *Apidologie* 40, pp. 662
11. Thenius, R., **Schmickl, T.**, Crailsheim, K. (2008) How to know without having been there? Investigating communication channels in the nectar collecting system of a honeybee colony. In: Bullock, S., Noble, J., Watson, R., Bedau, M. A. (eds.) **Artificial Life XI: Proceedings of the Eleventh International Conference on the Simulation and Synthesis of Living Systems**. MIT Press, Cambridge, MA: pp.807
12. Vollmann J., **Schmickl T.**, Crailsheim K. (2004) The reaction of honeybee colonies to different quantities of brood. *Apidologie* 35: 546-547.
13. Thenius R., **Schmickl T.**, Crailsheim K. (2004) Multi-factoral simulation of the nectar income dynamics in honeybee colonies. *Apidologie* 35: 545-546.
14. Hergouth M., Petz M., **Schmickl T.**, Crailsheim K. (2004) Minimised structural complexity of honeybee colonies. *Apidologie* 35: 544-545.
15. Hrassnigg N., Brodschneider R., Riessberger-Galle U., **Schmickl T.**, Danzer M., Stabentheiner A., Crailsheim K. (2001) Observations on the grooming behaviour of worker bees (*Apis mellifera*). *Apidologie* 32: 502-503.
16. **Schmickl T.**, Crailsheim K. (2001) Survival of honeybee larvae in times of pollen stress. *Apidologie* 32: 496-498.
17. Hrassnigg N., Loidl A., Riessberger U., **Schmickl T.**, Danzer M., Stabentheiner A., Crailsheim K. (2000) Observations on the hygienic behaviour of honeybee workers (*Apis mellifera* L.). *Apidologie* 31: 649-650.
18. **Schmickl T.**, Crailsheim K. (2000) Nursing of honeybees depending on weather, resources and other hive conditions (*Apis mellifera* L.). *Apidologie* 31: 642-644.
19. **Schmickl T.**, Crailsheim K. (1998) The influence of weather conditions on brood nursing by honeybees (*Apis mellifera* L.). *Apidologie* 29: 460-462.

Abstracts in citable conference proceedings:

OR: oral presentation, talk; PO: Poster; WS: Workshop; the presenting author is listed underlined.

1. Hahshold S., Szopek M., Radspieler G., Thenius R., **Schmickl T.**, Crailsheim K.: (2012) *Collective decision making in honeybees: temperature gradient vs social gradient*. In: (Hg.): Abstracts for the 5th Congress of the European Sections of International Union for the Study of Social Insects, Montecatini Terme, Italy (OR)
2. Kengyel D., Radspieler G., Wotawa F., **Schmickl T.** (2012): OR: *Emulation of collective honeybee behaviour by a swarm of simple robot*, für: 5th Congress of the European Sections of the International Union for the Study of Social Insects, Montecatini Terme, Italy (OR)
3. Hahshold S., Szopek M., Radspieler G., Thenius R., **Schmickl T.**, Crailsheim K. (2010) *Collective Decision making in honeybees: environmental attraction factors versus socially driven aggregation*. In: David R. Nash Susanne P.A. den Boer Henrik H. De Fine Licht Jacobus J. Boomsma (eds.): Abstracts for the XVI Congress of the International Union for the Study of Social Insects (*IUSSI'10*) Copenhagen, Denmark, 8-13 August 2010. (PO)
4. **Schmickl T.**, Radspieler G., Szopek M., Hahshold S., Thenius R., Wissek D., Crailsheim K. (2010) *From honeybee behaviour to swarm robotics*. In: David R. Nash Susanne P.A. den Boer Henrik H. De Fine Licht Jacobus J. Boomsma (eds.): Abstracts for the XVI Congress of the International Union for the Study of Social Insects (*IUSSI'10*) Copenhagen, Denmark, 8-13 August 2010. (OR)
5. Szopek M., Radspieler G., Thenius R., **Schmickl T.**, Crailsheim K. (2010) *Cooperative thermotaxis of honeybees in a complex and dynamic thermal environment*. In: David R. Nash Susanne P.A. den Boer Henrik H. De Fine Licht Jacobus J. Boomsma (eds.): Abstracts for the XVI Congress of the International Union for the Study of Social Insects (*IUSSI'10*) Copenhagen, Denmark, 8-13 August 2010.. 2010. (PO)
6. Szopek M., Radspieler G., **Schmickl T.**, Thenius R., Crailsheim, K. (2008) PO: *Recording and tracking of locomotion and clustering behaviour in young honeybees (Apis mellifera)*, Measuring Behavior 2008. (PO)

7. **Schmickl T.**, Thenius R., Crailsheim K. (2005) Collective decision making: A multi-agent simulation of a foraging honeybee colony. In: Bees, Ants and Termites: Applied and Fundamental Research, edited by: HH Kaatz, M Becher and RFA Moritz, IUSSI International Union zum Studium der Sozialen Insekten. Halle/Saale, Germany. ISBN 3-901864-02-4. pp. 138. (OR)
8. Thenius R., **Schmickl T.**, Crailsheim K. (2005) Importance of heterogeneity in honeybee (*Apis mellifera* L.) dance-response curves for optimal foraging. In: Bees, Ants and Termites: Applied and Fundamental Research, edited by: HH Kaatz, M Becher and RFA Moritz, IUSSI International Union zum Studium der Sozialen Insekten. Halle/Saale, Germany. ISBN 3-901864-02-4. pp. 140. (OR)
9. **Schmickl T.**, Crailsheim K. (2005) A mathematical model for predicting intra-colonial population dynamics of honeybees. In: Bees, Ants and Termites: Applied and Fundamental Research, edited by: HH Kaatz, M Becher and RFA Moritz, IUSSI International Union zum Studium der Sozialen Insekten. Halle/Saale, Germany. ISBN 3-901864-02-4. pp. 60. (OR)
10. **Schmickl T.**, Crailsheim K. (2004) Analyzing the efficiency of honeybee foraging decisions by multi-agent simulation. In: Proceedings of the First European Conference of Apidology (EURBEE'04). 19th-24th September 2004, Udine, Italy, edited by I. Bernardelli and N. Milani, Arti Grafiche Friulane SpA, Udine, ISBN 88-86550-99-5, pp. 52. (OR)
11. Petz M., **Schmickl T.**, Crailsheim K. (2004) Simulating the adaptation of nursing to changes of colony supply to brood ratio. In: Proceedings of the First European Conference of Apidology (EURBEE'04). 19th-24th September 2004, Udine, Italy, edited by I. Bernardelli and N. Milani, Arti Grafiche Friulane SpA, Udine, ISBN 88-86550-99-5, pp. 53-54. (PO)
12. Brodtschneider R., **Schmickl T.**, Crailsheim K. (2004) Individual nurse bees' behaviour in changing nursing workloads. In: Proceedings of the First European Conference of Apidology (EURBEE'04). 19th-24th September 2004, Udine, Italy, edited by I. Bernardelli and N. Milani, Arti Grafiche Friulane SpA, Udine, ISBN 88-86550-99-5, pp. 54. (PO)

13. Vollmann J., Hrassnigg N., **Schmickl T.**, Crailsheim K. (2004) Regulation of nursing workforce in a honeybee colony according to different workloads. In: Proceedings of the First European Conference of Apidology (EURBEE'04). 19th-24th September 2004, Udine, Italy, edited by I. Bernardelli and N. Milani, Arti Grafiche Friulane SpA, Udine, ISBN 88-86550-99-5, pp. 55. (PO)
14. Hergouth M., **Schmickl T.**, Crailsheim K. (2004) Efficiency of brood care behaviour in dwarf colonies. In: Proceedings of the First European Conference of Apidology (EURBEE'04). 19th-24th September 2004, Udine, Italy, edited by I. Bernardelli and N. Milani, Arti Grafiche Friulane SpA, Udine, ISBN 88-86550-99-5, pp. 55-56. (PO)
15. Thenius R., **Schmickl T.**, Crailsheim K. (2004) Formation of multiple transfers in honeybee forager-receiver interaction, a multi-agent simulation. In: Proceedings of the First European Conference of Apidology (EURBEE'04). 19th-24th September 2004, Udine, Italy, edited by I. Bernardelli and N. Milani, Arti Grafiche Friulane SpA, Udine, ISBN 88-86550-99-5, pp. 55-56. (PO)
16. **Schmickl T.**, Crailsheim K. (2001) SimBee: Simulating population dynamics and pollen management of a honeybee colony. Proceedings of the IUSSEI'2001, Berlin, Germany.
17. **Schmickl T.**, Crailsheim K. (2001) SimBee: Population and resource dynamics of a honeybee colony. Symposium "From the worker to the colony" by the British section of IUSSEI, Dez. 2001 in Cambridge, UK.

Other conference publications¹:

OR: oral presentation, talk; PO: Poster; WS: Workshop; PR: Presentation; the presenting author is listed underlined.

1. **Schmickl T.** (2015) OR: Modular bio-inspired algorithms for autonomous underwater robot swarms in CoCoRo and subCULTron. In: Proceedings of the workshop "Bioinspired underwater robotics" at IROS 2015, Hamburg, Germany.

¹ Some of these conference presentations correspond to articles or abstracts in peer reviewed journals. The full references to those articles are listed in the previous sections.

2. **Schmickl T. (2015)** OR: Honeybee-inspired models and swarm (robotic) algorithms. In: Proceedings of the in the workshop “Social Behaviour and Self-Regulation in Insects, Swarms and Algorithms” at DZG 2015, Graz, Austria.
3. **Karsai, I., Schmickl, T. (2015)** OR: Organization of work via the common stomach. SATELLITE SYMPOSIUM IV: SOCIAL BEHAVIOUR AND SELF-REGULAION IN INSECTS, SWARMS AND ALGORITHMS. 108th Annual meeting of the German Zoological Society. 2015 Graz, Austria, Sept 08-12. Abstracts p. 159. Invited keynote speaker
4. **Karsai, I., Schmickl, T. (2015)** OR: Organization of work via the common stomach in social insects. 3rd Workshop on Biological, Distributed Algorithms. Boston, MA at MIT, August 18-19. Abstract http://www.sn1.salk.edu/~navlakha/BDA2015/speaker_abstracts.txt Invited speaker
5. Mayet R., Roberz J., ***Schmickl T.***, Crailsheim K. (2015) PO: Antbots: A feasible visual emulation of pheromone trails for swarm robots. at DZG 2015, Graz, Austria.
6. **Szopek M., Bodi M., Schönwetter-Fuchs-Schistek S., Salem Z., Zahadat P., Schmickl T. (2015)** OR: Biohybrid swarms: A new way to examine collective behaviours. Symposium IV: Social Behaviour and Self-Regulation in Insects, Swarm and Algorithms, of the 108th Annual Meeting of the German Zoological Society (DZG).
7. **Zahadat, P., Schmickl, T., (2015)** PO: *Evolving Controllers for Programmable Robots to Influence Non-Programmable Lifeforms: A Case Study*, für 18th European Conference, EvoApplications 2015, Kopenhagen, Dänemark, 08.04. - 10.04.2015
8. **Rössler, C., Witzmann, M., Schmickl, T., (2015)** PO: *Modelling "Breaking Bad": An economic model of drug and population dynamics to predict how the series itself feeds back into the drug market*, MATHMOD 2015, Vienna, Austria, 18.02. - 20.02.2015
9. **Karsai, I., Schmickl, T.,** Hamann, H. and Hilbun, A. (2014). The common stomach: Organizing task allocation in wasp societies. Symposium on Biomathematics and Ecology: Education and Research, 2014 Claremont, CA Oct. 10-12. Abstracts p. 36-37.

10. Szopek M., Hahshold S., Thenius R., Bodi M., Crailsheim K., **Schmickl T.**, (2014) PO: ASSISIbf: Honeybees and robots form a bio-hybrid society, für: ÖEG-Kolloquium 2014, Graz, Austria, 22. 3. 2014
11. Szopek M., Bodi M., Hahshold S., Thenius R., **Schmickl T.**, (2014) OR: ASSISIbf: A new pathway to examine collective behaviours in honeybees, für: 17th Congress of the International Union for the Study of Social Insects (IUSSI 2014), 13 - 18 July 2014, Cairns, Australia
12. Hahshold S., Ploder R., **Schmickl T.**, Crailsheim K. (2013) PO: *Temperaturpreferendum einzelner, junger Honigbienen in der Temperaturorgel*, für: 60. Jahrestagung der Arbeitsgemeinschaft der Institute für Bienenforschung, 2013.
13. Szopek M., Hahshold S. Thenius R., Bodi M., Crailsheim K., **Schmickl T.** (2013) PO: *Der Weg zu ASSISI/bf: Wie Honigbienen und Maschinen kollektive Entscheidungen treffen können*, für: 60. Jahrestagung der Arbeitsgemeinschaft der Institute für Bienenforschung, 2013.
14. Hahshold S., Ploder R., Radspieler G., **Schmickl T.**, Crailsheim K. (2013) PO: *Behaviour of single, young honeybees in a temperature organ*, für: XXXXIII International Apicultural Congress 29th September – 04th October 2013; Kiev 2013
15. Stradner J., Hamann H., S. F. Schwarzer C., Michiels K. N., **Schmickl T.**, (2013) PO: *Virtual Spatiality in Agent Controllers: A Concept to Enhance Evolvability*, für EVOSTAR 2013 03th April – 05th April; Vienna 2013
16. **Schmickl T.**, Thenius R., Zahadat P., Hahshold S., Möslinger C., (2013) PO: CoCoRo – Collective Cognitive Robots, für EVOSTAR 2013 03th April – 05th April; Vienna 2013
17. **Schmickl T.**, Thenius R., Hahshold S., Szopek M., Crailsheim K., (2013) PO: ASSISI_bf, für EVOSTAR 2013 03th April – 05th April; Vienna 2013
18. Halloy J., Mondada F., Kernbach S., **Schmickl T.** (2013) PO: Towards Bio-hybrid Systems Made of Social Animals and Robots. At: Living Machines Conference 2013, London, U.K.

19. **Schmickl T.**, Bogdan S., Correia L., Kernbach S., Mondada F., Bodi M., Gribovskiy A., Hahshold H., Miklic D., Szopek M., Thenius R., Halloy J. (2013). PO: ASSISI: Mixing Animals with Robots in a Hybrid Society. At: Living Machines Conference 2013, London, U.K.
20. **Schmickl T.**, Szopek M., Bodi M., Hahshold S., Radspieler G., Thenius R., Bogdan S., Miklic D., Kriparic K., Haus T., Kernbach S., Kernbach O. (2013) PO: ASSISI: Charged hot bees shakin' in the spotlight, für: SASO 2013 Seventh IEEE International Conference on Self-Adaptive and Self-Organizing Systems , 2013.
21. Szopek M., Hahshold S., Thenius R., Bodi M., Crailsheim K., **Schmickl T.** (2013): PO: ASSISI/bf: *The path to a bio-hybrid society of honeybees and robots*, für: XXXXIII International Apicultural Congress Apimondia, 2013.
22. Bodi M., Szopek M., Radspieler G., **Schmickl T.**, Crailsheim K. (2012) PO: *Modelling aggregation behaviour in bees and robots*, für: Eurbee 5, 2012.
23. Kengyel D. Radspieler G., Wotawa F., **Schmickl T.** (2012): OR: *Emulation of collective honeybee behaviour by a swarm of simple robot*, für: 5th Congress of the European Sections of the International Union for the Study of Social Insects, Montecatini Terme, Italy
24. Hahshold S., Szopek M., Radspieler G., Thenius R., **Schmickl T.**, Crailsheim K. (2012) PO: *Der Einfluss eines sozialen Gradienten auf die Entscheidung von Bienen in einem Temperaturgradienten*, für: 59. Jahrestagung der Arbeitsgemeinschaft der Institute für Bienenforschung , 2012.
25. Szopek M., Radspieler G., Thenius R., **Schmickl T.**, Crailsheim, K. (2012) PO: *Collective decision making of young honeybees in complex thermal environments*, für: 5th congress european sections of the IUSI, 2012.
26. Szopek M., Bodi M., Radspieler G., **Schmickl T.**, Crailsheim K. (2012) OR: *Modelling collective decision making in honeybees*, für: Eurbee 2012, Halle (Saale), Germany, 4.9. 2012
27. Thenius R., **Schmickl T.**, Stradner J., Zahadat P., Hahshold S., Moeslinger Ch., Szopek M., Bodi M., Crailsheim K. (2012) PO: *CoCoRo - collective cognitive robots From biology to deep-sea exploration*, für: CogSys Vienna 2012, 2012.

28. Thenius R., Dauschan M., Bodi M., **Schmickl T.**, Crailsheim K. (2011) OR: Usage of EvoDevo in Robotic Systems. Research Days 2011, Lakeside Labs.
29. Thenius R., Dauschan M., Bodi M., **Schmickl T.**, Crailsheim K. (2011) OR: Regenerative abilities in modular robots using virtual embryogenesis. International Conference on Adaptive and Intelligent Systems ICAIS'11, 2011.
30. Szopek M., Hahshold S., Thenius R., **Schmickl T.**, Crailsheim K. (2011) PO: Wie Sozialkontakte die kollektive Entscheidung von Honigbienen beeinflussen. 58. Jahrestagung der Arbeitsgemeinschaft für Bienenforschung, Berlin, 2011.
31. Hahshold S., Radspieler G., Szopek M., Thenius R., **Schmickl T.**, Crailsheim K. (2010) OR: Robuste Gruppenentscheidungen bei Honigbienen. Kolloquium der Österreichischen Entomologischen Gesellschaft 2010.
32. Hahshold S., Szopek M., Thenius R., **Schmickl T.**, Crailsheim K., (2011) PO: How modulation of resting time affects collective decision making in honeybees, at: Apimondia 2011.
33. Radspieler G., Thenius R., **Schmickl T.**, Crailsheim K. (2011) PO: *Stability of behavioural classes in young honeybees*, at: Apimodía 2011.
34. **Schmickl T.**, Radspieler G., Szopek M., Hahshold S., Thenius R., Wissek D., Crailsheim K. (2010) OR: From honeybee behaviour to swarm robotics. IUSSI XVI Congress, 2010.
35. Hahshold S., Szopek M., Radspieler G., Thenius R., **Schmickl T.**, Crailsheim K. (2010) PO: Collective decision making in honeybees: Environmental attraction factors versus socially_driven aggregation. IUSSI XVI Congress, 2010.
36. Szopek M., Radspieler G., Thenius R., **Schmickl T.**, Crailsheim K. (2010) PO: Cooperative thermotaxis of honeybees in a complex and dynamic thermal environment. IUSSI XVI Congress, 2010.
37. Thenius R., Radspieler G., **Schmickl T.**, Crailsheim K. (2010) PO: Novel low-budget method for observing honeybee behaviour in temperature fields. IUSSI XVI Congress, 2010.

38. Hahshold S., Radspieler G., Thenius R., **Schmickl T.**, Crailsheim K. (2010) PO: Kooperative Thermotaxis bei Honigbienen: Sozialer Gradient vs. Temperaturgradient. 57. Jahrestagung der Arbeitsgemeinschaft für Bienenforschung, 2010.
39. Szopek M., Radspieler G., Thenius R., **Schmickl T.**, Crailsheim K. (2010) PO: Kooperative Thermotaxis bei Honigbienen: Flexibles Gruppenverhalten in einer dynamischen Umwelt. 57. Jahrestagung der Arbeitsgemeinschaft für Bienenforschung, 2010.
40. Mayet R., Roberz J., Schmickl T., Crailsheim K. (2010) PO+OR: Antbots: A feasible visual emulation of pheromone trails for swarm robots. ANTS 2010 – Seventh International Conference on Swarm Intelligence, 2010.
41. Thenius R., Bodi M., **Schmickl T.**, Crailsheim K. (2010) OR: Using virtual embryogenesis for structuring controllers. ICARIS 2010.
42. Bodi M., Thenius R., **Schmickl T.**, Crailsheim K. (2009) OR: How two cooperating robot swarms are affected by two conflictive aggregation spots. European Conference on Artificial Life (ECAL'09) Budapest, Hungary, 2009.
43. Hamann H., **Schmickl T.**, Crailsheim K. (2009) PO: Evolving for Creativity: Maximizing Complexity in a Self-Organized Multi-Particle System. European Conference on Artificial Life (ECAL'09) Budapest, Hungary, 2009.
44. Kengyel D., Schmickl T., Hamann H., Thenius R., Crailsheim K. (2009) OR: Embodiment of Honeybee's Thermotaxis in a Mobile Robot Swarm. European Conference on Artificial Life (ECAL'09) Budapest, Hungary, 2009.
45. Möslinger Ch., **Schmickl T.**, Crailsheim K. (2009) OR: A Minimalist Flocking Algorithm for Swarm Robots. European Conference on Artificial Life (ECAL'09) Budapest, Hungary, 2009.
46. **Schmickl T.**, Crailsheim K. (2009) OR: Economics of Specialization in Honeybees. A multi-agent simulation study of honeybees. European Conference on Artificial Life (ECAL'09) Budapest, Hungary, 2009.

47. Stradner J., Hamann H., **Schmickl T.**, Thenius R., Crailsheim K. (2009) PO: Evolving a novel bio-inspired controller in reconfigurable robots. European Conference on Artificial Life (ECAL'09) Budapest, Hungary, 2009.
48. Thenius R., Bodi M., **Schmickl T.**, Crailsheim K. (2009) PO: Growth of structured artificial neural networks by virtual embryogenesis. European Conference on Artificial Life (ECAL'09) Budapest, Hungary, 2009.
49. **Schmickl T.**, Stradner J., Hamann H., Crailsheim K. (2009) PO: Major feedbacks that support artificial evolution in multi-modular robotics. in: EVODEROB workshop, IEEE/RSJ International Conference on Intelligent RObots and Systems (IROS'09), St. Louis, MO, USA, October 11-15, 2009.
50. Stradner J., Hamann H., **Schmickl T.**, Crailsheim K. (2009) OR: Analysis and Implementation of an Artificial Homeostatic Hormone System: A First Case Study in Robotic Hardware. IEEE/RSJ International Conference on Intelligent RObots and Systems (IROS'09), St. Louis, MO, USA, October 11-15, 2009
51. Sattler B., Thenius R., Reichel O., **Schmickl T.** (2009) PO: Is a one-dimensional simulator sufficient to evaluate algorithms for swarm robotics? MATHMOD 2009, Vienna.
52. Hahshold S., Radspieler G., Thenius R., **Schmickl T.**, Crailsheim K. (2009) OR: Cooperative Thermotaxis in Honeybees: Duration of Cluster Formation and Robustness. 1st Central European Meeting of the International Union for the Study of Social Insects (IUSSI) , 11.10.2009.
53. Radspieler G., Szopek M., Hahshold S., Thenius R., **Schmickl T.**, Crailsheim K. (2009) OR: Behavioural classes among young honeybees in a temperature gradient. 1st Central European Meeting of the International Union for the Study of Social Insects (IUSSI) , 11.10.2009.
54. Szopek M., Radspieler G., Thenius R., **Schmickl T.**, Crailsheim K. (2009) OR: Make a walk to the warm(est) side. 1st Central European Meeting of the International Union for the Study of Social Insects (IUSSI) , 11.10.2009.
55. Thenius R., Radspieler G., Szopek M., **Schmickl T.**, Crailsheim K. (2009) Novel method for observation of honeybee behaviour in a two-dimensional temperature

- gradient. 1st Central European Meeting of the International Union for the Study of Social Insects (IUSSI) , 11.10.2009.
56. Hahshold S., Radspieler G., Thenius R., *Schmickl T.*, Crailsheim K. (2009) PO: Kooperative Thermotaxis bei Honigbienen: Wie robust sind Gruppenentscheidungen? Jahrestagung der Arbeitsgemeinschaft der Institute für Bienenforschung, Schwerin, 2009.
57. Hahshold S., Radspieler G., Thenius R., *Schmickl T.*, Crailsheim K. (2009) PO: Robustness of group decisions in honeybees. APIMONDIA 2009.
58. Szopek M., Radspieler G., Thenius R., *Schmickl T.*, Crailsheim K. (2009) PO: The influence of group size on cooperative decision making in honeybees. 41st APIMONDIA 2009.
59. Szopek M., Radspieler G., Thenius R., *Schmickl T.*, Crailsheim K. (2009) PO: Kooperative Thermotaxis bei Honigbienen: Gruppenentscheidungen in einem komplexen Temperaturgradienten. 56. Jahrestagung der Arbeitsgemeinschaft für Bienenforschung, 2009.
60. Vollmann J., Thenius R., *Schmickl T.*, Crailsheim K. (2009) PO: Berührungslose Altersbestimmung von Honigbienenlarven (*Apis mellifera carnica* Pollm.) 56. Jahrestagung der Arbeitsgemeinschaft der Institute für Bienenforschung e.V. March 2009. Schwerin (Mecklenburg-Vorpommern), 2009.
61. Schmickl T., Thenius R. Möslinger Ch., Crailsheim K. (2009) OR: Bio-Inspiration als Weg zu intelligenten Roboterschwärmen. PR: Kolloquium der Österreichischen Entomologischen Gesellschaft, Graz, Austria, 21st March, 2009.
62. Szopek M., Radspieler G., Thenius R., *Schmickl T.*, Crailsheim K. (2009). OR: Verhalten junger Honigbienen in zweidimensionalen Temperaturgradienten. Kolloquium der Österreichischen Entomologischen Gesellschaft, Graz, Austria, 21st March, 2009.
63. Baele G., Bredeche N., Haasdijk E., Maere S., Michiels N., Van de Peer Y., *Schmickl T.*, Schwarzer Ch., Thenius, R. (2009) Open-ended On-board Evolutionary Robotics for Robot Swarms. PO: IEEE Congress on Evolutionary Computation (CEC'09) Trondheim, Norway, 18th -21st of May, 2009.

64. Szymanski M., Winkler L., Laneri D., Schlachter F., van Rossum A.C., **Schmickl T.**, Thenius R. (2009) SymbricatorRTOS: A Flexible and Dynamic Framework for Bio-Inspired Robot Control Systems and Evolution. PO: IEEE Congress on Evolutionary Computation (CEC'09) Trondheim, Norway, 18th -21st of May, 2009.
65. **Schmickl T.**, Crailsheim K. (2009) Modelling a hormone-based robot controller. OR: MATHMOD 2009 Vienna , Austria 11th -13th February 2009.
66. Thenius R., **Schmickl T.**, Crailsheim K. (2009) Novel concept of modelling embryology for structuring an artificial neural network. OR: MATHMOD 2009 Vienna , Austria 11th -13th February 2009.
67. Radspieler G., Thenius R., **Schmickl T.** (2009) OR: Individual-based modelling of temperature-induced aggregation behaviour. OR: MATHMOD 2009 Vienna , Austria 11th -13th February 2009.
68. Bodi M., Thenius R., **Schmickl T.**, Crailsheim K. (2009) OR: Robustness of two interacting robot swarms using the BEECLUST algorithm. OR: MATHMOD 2009 Vienna , Austria 11th -13th February 2009.
69. Szopek M., Radspieler G., **Schmickl T.**, Thenius R., Crailsheim K. (2008) PO: Recording and tracking of locomotion and clustering behaviour in young honeybees (*Apis mellifera*). Measuring Behavior, 2008.
70. Radspieler G., **Schmickl T.**, Thenius R., Crailsheim K. (2008) PO: Behavioural Analysis of the aggregation. EURBEE 3, Symposium: Behaviour and Physiology (Sandoz), 2008.
71. Radspieler G., Thenius R., **Schmickl T.**, Crailsheim K. (2008) PO: Behavioural groups of young honeybees in a two-dimensional temperature gradient. IUSSI Conference in La Roch en Ardenne (Belgien), 2008.
72. Crailsheim K., Möslinger Ch., **Schmickl T.** (2008) OR: Trophallaxis of bees inspired a robotic swarm. EurBee 3, Belfast, 2008.
73. Crailsheim K., Thenius R., Möslinger Ch., Radspieler G., **Schmickl T.** (2008) Honeybee-derived aggregation of swarm robots. IUSSI 2008.

74. Schmickl T., Crailsheim K. (2008) Analysing honeybees' division of labour in broodcare by a multi-agent model. OR: Artificial Life XI, Winchester, UK, 5th-8th August, 2008.
75. Kernbach S., Meister E., Schlachter F., Jebens K., Szymanski M., Liedke J., Laneri D., Winkler L., Schmickl T., Thenius R., Corradi P., Ricotti L (2008) Symbiotic Robot Organisms: Replicator and Symbrion Projects. OR: **PerMIS 08**, August 19-21, 2008, Gaithersburg, MD, USA
76. Hamann H., Wörn H., Crailsheim K., Schmickl T. (2008) Spatial Macroscopic Models of a Bio-Inspired Robotic Swarm Algorithm. OR: IEEE/RSJ International Conference on Intelligent Robots and Systems, **IROS'08**, Nice, 2008
77. Corradi P., Schmickl T., Scholz O., Menicassi A., Dario P. (2008) Optical Networking in a Swarm of Microrobots. OR: 3rd International Conference on Nano-Networks. **Nano-Net 2008**, Boston, Massachusetts, September 14-16, 2008.
78. Schmickl T., Crailsheim K. (2008) An individual-based model of task selection in honeybees. OR: Simulating Adaptive Behavior (SAB'08), Osaka, Japan, 7th - 12th July 2008.
79. Schmickl T. (2008) Individual-based models of honeybee intra-colonial regulation: Task-selection, nutrient allocation, brood care and navigation. OR: Workshop on Modelling Complex Biological Systems, 17th-18th April 2008, Uppsala, Sweden.
80. Thenius, R., Schmickl, T., Crailsheim, K. (2008) How to know without having been there? Investigating communication channels in the nectar collecting system of a honeybee colony. OR: Artificial Life XI, Winchester, UK, 5th-8th August, 2008.
81. Karsai I., Schmickl T., Knisley J. (2007) Integrating Math and Biology through Storytelling: The Salmon Example. OR at: MathFest 2007, San Jose, CA, 3rd – 5th Aug. 2007, USA.
82. Radspieler G., Thenius R., Schmickl T., Crailsheim K. (2007) Behaviour of honeybees in a two-dimensional temperature gradient. PO at : 20th meeting of the German section of the IUSI, 25th-28th Sept. 2007, Bochum, Germany.

83. Thenius R., **Schmickl T.**, Kornienko S., Crailsheim K. (2007) Bee-derived collision based algorithm tested in a micro-robot-swarm. PO at: 20th meeting of the German section of the IUSI, 25th-28th Sept. 2007, Bochum, Germany.
84. **Schmickl T.**, Crailsheim K. (2006) A Navigation Algorithm for Swarm Robotics Inspired by Slime Mold Aggregation. OR at: Second SAB 2006 International Workshop on Swarm Robotics, Rome, 30th Sept. – 1st Oct. 2006, Italy.
85. **Schmickl T.**, Möslinger, C., Crailsheim K. (2006) Collective perception in a robot swarm. OR at: Second SAB 2006 International Workshop on Swarm Robotics, Rome, 30th Sept. – 1st Oct. 2006, Italy.
86. **Schmickl T.**, Crailsheim K., (2006) Bubbleworld.evo: Artificial evolution of behavioral decisions in a simulated predator-prey ecosystem. OR at: 9th International Conference on Simulating Adaptive Behavior (SAB'06), Rome, 35th – 30th Sept2006, Italy.
87. Thenius R., **Schmickl T.**, Crailsheim K., (2006) Economic optimisation in honeybees: adaptive behaviour of a superorganism. PO&OR at: 9th International Conference on Simulating Adaptive Behavior (SAB'06), Rome, 35th – 30th Sept2006, Italy.
88. **Schmickl T.**, Crailsheim K. (2006) Trophallaxis among swarm-robots: A biologically inspired strategy for swarm robotics. OR at: 1st IEE/RAS-EMBS International Conference on Biomedical Robotics and Biomechanotronics (BIOROB'06), Pisa, 20th - 22th Feb. 2006, Italy.
89. **Schmickl T.**, Crailsheim K. (2006) Modelling the self-organized division of labour in honeybees. OR at: 5th Vienna Symposium on Mathematical Modelling (MATHMOD'06), Vienna, 8th-10th Feb. 2006 Austria.
90. Thenius R., **Schmickl T.**, Crailsheim K. (2006) Modelling nectar-collecting behaviour in a honeybee colony. OR at: 5th Vienna Symposium on Mathematical Modelling (MATHMOD'06), Vienna, 8th-10th Feb. 2006 Austria.
91. Riessberger-Galle U. **Schmickl T.**, Crailsheim K. (2006) How does pollen deprivation and social deprivation affect food exchange and other social contacts in

honeybees? PO at: Conference of the International Union for the Study of Social Insects, 30th July-5th Aug. 2006, Washington, D.C., USA

92. Thenius R., Schmickl T., Crailsheim K. (2006) How do Babybees find a Temperature Optimum? OR at: European Conference of Apidology (EURBEE 2006) 10th-14th Sept. 2006, Prague, Czech Republic.
93. Thenius R., **Schmickl T.**, Crailsheim K. (2005) The “Dance or Work” Problem: Why Do not all Honeybees Dance with Maximum Intensity. OR at: 4th International Central and Eastern European Conference on Multi-Agent Systems, 15th – 17th Sept. 2005, Budapest, Hungary.
94. **Schmickl T.**, Thenius R., Crailsheim K. (2005) Simulating Swarm Intelligence in Honey Bees: Foraging in Differently Fluctuating Environments PO at: Genetic and Evolutionary Computation Conference (GECCO’05), 25th-29th June, 2005, Washington, DC, USA.
95. **Schmickl T.** (2005) Multi-Agentensimulation der dezentralen Regulation der Arbeitsteilung bei Honigbienen. OR at: 2nd CEQUACOS meeting, 6th Oct. 2005, Graz, Austria.
96. **Schmickl T.**, Thenius R., Crailsheim K. (2005) Simulating the regulation of task selection in honeybees. OR at: 3rd European Congress on Social Insects, 21st-29th Aug. 2005, St-Petersburg, Russia.
97. **Schmickl T.**, Thenius R., Crailsheim K. (2005) Modelling multiple transfer and nectar flow in honeybees. OR at: 3rd European Congress on Social Insects, 21st-29th Aug. 2005, St-Petersburg, Russia.
98. Schmickl T. (2005) Kollektive Sammel-Entscheidungen: Eine Multi-Agenten-Simulation einer Honigbienen-kolonie. OR at: Kolloquium der Entomological Society of Austria (ESA, OEG), St. Pölten, Austria.
99. Crailsheim K., Thenius R., **Schmickl T.** (2005) Distribution of honeybee foragers on nectar patches: a computer-simulation study. PO at: APIMONDIA conference 21th – 26th Aug. 2005 in Dublin, Ireland.

100. Vollmann J., *Schmickl T.*, Crailsheim K. (2004) The reaction of honeybee colonies to different quantities of brood. PO at German Bee Research Seminar, Münster, Germany.
101. Thenius R., *Schmickl T.*, Crailsheim K. (2004) Multi-factoral simulation of the nectar income dynamics in honeybee colonies. . PO at German Bee Research Seminar, Münster, Germany.
102. Hergouth M., Petz M., *Schmickl T.*, Crailsheim K. (2004) Minimised structural complexity of honeybee colonies. . PO at German Bee Research Seminar, Münster, Germany.
103. Schmickl T. (2004) Computersimulation bei sozialen Insekten. Expert talk of the Austrian Entomological Society (ESA, OEG), 16th Oct. 2004, Graz, Austria.
104. *Schmickl T.*, Crailsheim K. (2003) Costs of environmental fluctuations and benefits of dynamic decentralized foraging decisions in honey bees. OR at: 2nd International Workshop on the Mathematics and Algorithms of Social Insects, Georgia Institute of Technology, 15th-17th Dec. 2003, Atlanta, USA.
105. *Schmickl T.*, Crailsheim K. (2003) A honeybee population model with special emphasis on resource management and division of labor. OR at: 4th IMACS Symposium on Mathematical Modeling (MATHMOD'03), 5th –7th Feb., 2003, Vienna, Austria.
106. *Schmickl T.*, Crailsheim K. (2003) Simulating honeybee foraging decisions based on individual stimuli responses. PO at: 18th Congress of the IUSSI Central European Section, Regensburg, Germany.
107. *Schmickl T.*, Crailsheim K. (2001) SimBee: Population and resource dynamics of a honeybee colony. PO at: From Worker to Colony: Understanding the Organisation of Insect Societies (Annual winter meeting of the British section of the IUSSI), 7th - 8th Dec. 2001, Cambridge, UK.
108. *Schmickl T.*, Crailsheim K. (2001) simBee: Simulating population dynamics and pollen management of a honeybee colony. PO at: Meeting of the European Sections of the International Union for the Study of Social Insects, 25th – 29th Sept. 2001, Berlin, Germany.

109. Hrassnigg N., Brodschneider R., Riessberger-Galle U., **Schmickl T.**, Danzer M., Stabentheiner A., Crailsheim K. (2001) Observations on the grooming behaviour of worker bees (*Apis mellifera*). PO at German Bee Research Seminar, Münster, Germany.
110. **Schmickl T.**, Crailsheim K. (2001) Survival of honeybee larvae in times of pollen stress. OR at: German Bee Research Seminar, Bad Neuenahr, Germany.
111. Hrassnigg N., Loidl A., Riessberger U., **Schmickl T.**, Danzer M., Stabentheiner A., Crailsheim K. (2000) Observations on the hygienic behaviour of honeybee workers (*Apis mellifera* L.). PO at: German Bee Research Seminar, Blaubeuren, Germany.
112. **Schmickl T.**, Crailsheim K. (2000) Nursing of honeybees depending on weather, resources and other hive conditions (*Apis mellifera* L.). OR at: German Bee Research Seminar, Blaubeuren, Germany.
113. **Schmickl T.**, Crailsheim K. (2000) Brutkannibalismus bei der Honigbiene (*Apis mellifera carnica*) Wie Honigbienen die Größe ihres Brutnestes bei längeren Schlechtwetterperioden regulieren. OR at: Kolloquium of the Entomological Society of Austria (ESA/OEG), Vienna, Austria.
114. **Schmickl T.**, Crailsheim K. (1999) Nursing and brood cannibalism depending on pollen and weather. PO at: 36th APIMONDIA conference, September 1999, Vancouver, Canada.
115. **Schmickl T.**, Crailsheim K. (1998) The influence of weather conditions on brood nursing by honeybees (*Apis mellifera* L.). PO at: German Bee Research Seminar, Bremen, Germany.

Participated Conferences and International Workshops:

2015: MATHMOD 2015 (2 contributions), Vienna, Austria, EVOSTAR 2015 (1 contribution), Copenhagen, Denmark; ECAL 2015 (2 contributions), York, UK; DZG 2015 (6 contributions), Graz, Austria; PRIMA 2015 (1 contribution), Bertinoro, Italy.

2014: SASO 2014 (1 contribution), London UK, GECCO 2014 (1 contribution), Vancouver Canada, EVOSTAR 2014 (1 plenary talk), Granada, Spain, IUSSI 2014 (1 contribution), Cairns, Australia, ÖEG-Kolloquium 2014 (2 contributions), Graz, Austria, Symposium on Biomathematics and Ecology: Education and Research 2014 (1 contribution) Claremont, CA

2013: TAROS 2013, Oxford, U.K. (1 contribution); ECAL 2013, Taormino, Italy (5 contributions); Living Machines 2013, London, U.K. (2 contributions); SASO 2013, Philadelphia, U.S.A. (1 contribution); Apimondia, Kiev, Ukraine (2 contributions); German Bee Research Seminar, Würzburg, Germany (2 contributions).

2012: EurBee 2012, Halle an der Saale (3 contributions); IUSSI 2012, Montecatini Terme, Tuscany, Italy (3 contributions); German Bee Research Seminar, Bonn, Germany (2 contributions), SAB, Odense, Denmark (1 contribution).

2011: SSCI'11, Paris, France (1 contribution); FET Conference, Budapest, Hungary (1 contribution); GECCO'11, Dublin, Ireland (1 contribution); ICAR'11, Tallinn, Estonia (1 contribution); IROS'11, San-Francisco, USA (2 contributions); SASO'11, Ann Arbor, USA (1 contribution); ICAIS'11, Klagenfurt, Austria; BIONETICS 2011, York, UK.

2010: ICRA'10, Anchorage, USA (1 contribution); CEC'10, Barcelona, Spain (1 contribution), ANTS'10, Brussels, Belgium (2 contributions); Alife XII, Odense, Denmark (3 contribution), IUSSI 2010, Copenhagen, Denmark (5 contributions); SAB'10, Paris, France (1 contribution).

2009: German Bee Research Seminar, Schwerin, Germany (3 contributions); APIMONDIA Montpellier, France (2 contributions); OEG Kolloquium, Graz, Austria (2 contributions); IROS, St. Luis USA (2 contributions); ADAPTIVE 2009, Athens, Greece (1 contribution); IUSSI 2009 Fraueninsel Chiemsee, Germany (3 contributions); ECAL 2009, Budapest, Hungary (7 contributions); MATHMOD, Vienna, Austria (5 contributions); IEEE Congress on Evolutionary Computation (CEC'09), Trondheim, Norway (2 contributions).

2008: Measuring Behavior 2008, Maastricht, Netherlands (1 contribution); 4th European Meeting of the IUSSI (IUSSI'08), La Roche-en Ardenne, Belgium (2 contributions); 3rd European Conference of Apidology (EURBEE'08), Belfast, Northern Ireland (1 contribution); Workshop on Modelling Complex Biological Systems, Uppsala, Sweden (1 contribution); Simulating Artificial Behaviour, Osaka, Japan (1 contribution); Artificial Life XI, Winchester, U.K. (2 contributions); PerMis 08, Gaithersburg, USA (1 contribution); International

Conference on Intelligent Robots and Systems, Nice, France (1 contribution); International Conference on Nano-Networks, Boston, USA (1 contribution)

2007: Quantitative Biology Curriculum Planning Workshop, Johnson City, USA (participation); MathFest, San Jose, USA (1 contribution); IUSSI, Bochum, Germany (2 contributions)

2006: MATHMOD, Vienna, Austria (2 contributions); SAB Conference, Rome, Italy (2 contributions); SAB workshop on swarm robotics, Rome, Italy (2 contributions); BIOROB, Pisa, Italy (1 contribution); EURON, Palermo, Italy (participation); EUROBEE, Prague, Czech Republic (1 contribution); IUSSI Washington, USA (1 contribution)

2005: IUSSI, Halle, Germany (3 contributions); GECCO, Washington, USA (1 contribution); CEEMAS, Budapest, Hungary (1 contribution); EURON, Warsaw, Poland (1 workshop); CEQUACOS, Graz, Austria (1 contribution); IUSSI, St.Petersburg, Russia (2 contributions); OEG/ESA Colloquium, St. Pölten, Austria (2 contributions); EURON, Warsaw, Poland (1 workshop contribution); APIMONDIA, Dublin, Ireland (1 contribution)

2004: EURBEE, Udine, Italy (6 contributions); OEG/ESA Expert talk, Graz, Austria (1 contribution); German Bee Research Seminar, Münster, Germany (3 contributions)

2003: IUSSI, Regensburg, Germany (1 contribution); MASI, Atlanta, USA (1 contribution); MATHMOD, Vienna, Austria (1 contribution); European Forum Alpbach (participation)

2002: CEQUACOS, Graz, Austria (1 contribution); Bienentag, Lunz, Austria (1 contribution); European Forum Alpbach (participation).

2001: German Bee Research Seminar, Bad Neuenahr, Germany (2 contributions); IUSSI, Cambridge, England (1 contribution); IUSSI, Berlin, Germany (1 contribution)

2000: German Bee Research Seminar, Blaubeuren, Germany (2 contributions); OEG/ESA Expert talk, Vienna, Austria (1 contribution)

1999: APIMONDIA, Vancouver, Canada (1 contribution)

1998: German Bee Research Seminar, Bremen, Germany (1 contribution)