

# Anders Lyhne Christensen, Ph.D.

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## General

<b>Nationality:</b>	Danish
<b>Date of birth:</b>	March 3, 1977
<b>Family:</b>	Fiancée (nationality: Portuguese), two children (born May 2011 and Feb. 2016)
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<b>Google scholar:</b>	<a href="https://scholar.google.pt/citations?user=sKzmsq8AAAAJ&amp;hl=en">https://scholar.google.pt/citations?user=sKzmsq8AAAAJ&amp;hl=en</a>

## Bio

Anders Lyhne Christensen is an entrepreneur and a tenured assistant professor at the University Institute of Lisbon, Portugal where he recently founded the Bio-inspired Computation and Intelligent Machines Lab (BioMachines). In 2003, he obtained a Master degree in computer science and bio-informatics from Aalborg University, Denmark. He graduated with the highest grade average of his class. Later that year, he received a Marie Curie Fellowship hosted by the Dependable Systems Group at the Universidade de Coimbra and Critical Software SA., Portugal. He completed his Diplôme d'Études Approfondies (Master equivalent) on evolutionary robotics and swarm robotics at the Université Libre de Bruxelles in 2005. In 2008, he defended his PhD dissertation titled "Fault Detection in Autonomous Robots" at IRIDIA-CoDE, Université Libre de Bruxelles, Belgium under the supervision of Prof. Marco Dorigo.

Dr. Christensen has participated in several national and international research projects, he is on the editorial board of three international journals on artificial intelligence and robotics, and he has served on more than 50 conference committees, including AAMAS, AAI, IJCAI, and IROS. He has published more than 100 scientific papers. Dr. Christensen has held several positions in industry where he has developed products related to high performance computing, 3D acoustics, and multimedia. In 2015, he joined the COHiTEC technology commercialization training program as the leader of the team Ocean Swarm.

## Education

- **Nanodegree in Deep Learning Foundations** Mountain View, CA  
*Udacity* Feb. 2017 – July 2017
  - Tensorflow, convolutional nets, GANs, image classification, translation, text generation, and face generation. Completed all five course projects.
- **Act by Cotec - COHiTEC** Lisbon, Portugal  
*INDEG Business School Executive Education* Mar. 2015 – July 2015
  - Technology commercialization training program: Leader of the Ocean Swarm team. Development of a business proposal. 100 hours of sessions on topics including intellectual property rights, business models, financials, funding, go-to-market strategies, and market analysis.
- **European PhD in Robotics and Artificial Intelligence** Brussels, Belgium  
*IRIDIA-CoDE, Université Libre de Bruxelles* Oct. 2004 – June 2008
  - Thesis: “*Fault Detection in Autonomous Robots*”, area: autonomous robotics, machine learning, swarm intelligence
- **Diplôme d’Études Approfondies (DEA) in Robotics and AI** Brussels, Belgium  
*IRIDIA-CoDE, Université Libre de Bruxelles* Oct. 2004 – June 2005
  - Thesis: “*Efficient Neuro-Evolution of Hole-avoidance and Phototaxis for a Swarm-bot*”, area: evolutionary robotics
- **Master in Computer Science** Aalborg, Denmark  
*Department of Computer Science, Aalborg University* Sept. 2001 – Aug. 2003
  - Thesis: “*A New Approach to Multipoint Linkage Analysis*”, area: algorithms, bioinformatics
- **Bachelor in Computer Science** Aalborg, Denmark  
*Department of Computer Science, Aalborg University* Sept. 1998 – Jun. 2001
  - Thesis: “*MPI Broadcast on SCP*”, area: high performance computing, shared memory architectures

## Grants

- **Marie Curie, Early Stage Training** Brussels, Belgium  
*PhD student at IRIDIA-CoDE, Université Libre de Bruxelles* Oct. 2004 – Oct. 2007
- **Marie Curie, Industrial Host Fellowship** Coimbra, Portugal  
*Researcher at Critical Software SA and Universidade de Coimbra* Aug. 2002 – Aug. 2004

## Awards and Nominations

- **Nominated for Best Paper Award at PPSN** Edinburgh, Scotland  
*IC64: Cooperative Coevolution of Control for a Real Multirobot System* 2016
- **Best Student Paper Award at SASO** Augsburg, Germany  
*IC63: Online Hyper-Evolution of Controllers in Multirobot Systems* 2016

- Best Paper Award at EvoRobot** Porto, Portugal

  - IC57: *Leveraging Online Racing and Population Cloning in Evolutionary Multirobot Systems* 2016
- Best Robot Video Award (AAAI)** Phoenix, Arizona

  - IV6: *A Sea of Robots* 2016
- Nominated for Best Paper (ECAL)** York, UK

  - IC53: *Cooperative Coevolution of Morphologically Heterogeneous Robots* 2015
- Finalist project (top 5 of 46) at ESEGUR Open Mind** Lisbon, Portugal

  - Project: *Security at Sea with Swarms of Autonomous Surface Drones* 2014
- Nominated for Best Paper (EPIA)** Açores, Portugal

  - NC4: *Dynamics of Neuronal Models in Online Neuroevolution of Robotic Controllers* 2013
- Nominated for Best Paper (GECCO)** Amsterdam, Netherlands

  - IC36: *Generic Behaviour Similarity Measures for Evolutionary Swarm Robotics* 2013
- Paper of Excellence Award (EpiRob)** San Diego, CA

  - IC34: *Hierarchical Evolution of Robotic Controllers for Complex Tasks* 2012
- Tied for Best Paper (Collective Dynamics, ALIFE)** East Lansing, MI

  - IC28: *odNEAT: An Algorithm for Distributed Online, Onboard Evolution of Robot Behaviours* 2012
- Nominated for Best Video (IROS)** Vila Moura, Portugal

  - IV5: *Cooperation in a Heterogeneous Robot Swarm through Spatially Targeted Communication* 2012
- AAAI Best Video Award** San Francisco, CA

  - IV4: *Swarmanoid, The Movie* 2011
- Nominated for Best Robotics Paper** Toronto, Canada

  - IC19: *Establishing Spatially Targeted Communication in a Heterogeneous Robot Swarm* 2010
- AAAI Best Video Award** Vancouver, Canada

  - IV2: *Morphogenesis: Shaping Swarms of Intelligent Robots* 2007

## Affiliations

- **Institute of Electrical and Electronics Engineers** Lisbon, Portugal

  - *IEEE Senior Member* Sept. 2012 – Present

- **Instituto de Telecomunicações** Lisbon, Portugal  
*Researcher* *Dec. 2009 – Present*
- **IRIDIA-CoDE, Université Libre de Bruxelles** Brussels, Belgium  
*Doctoral researcher* *Oct. 2004 – Nov. 2007*  
– Supervised by: Prof. Marco Dorigo
- **DEI, Universidade de Coimbra** Coimbra, Portugal  
*Researcher* *Aug. 2002 – Aug. 2004*  
– Supervised by: Prof. João Gabriel Silva
- **CS, Aalborg University** Aalborg, DK  
*Master Studies* *Sept. 1998 – Aug. 2003*  
– Supervised by: Josva Kleist, Anna Ingolddottir, Gerd Behrmann

## Positions held

- **Bio-inspired Computation and Intelligent Machines Lab** Lisbon, Portugal  
*Founder* *Sept. 2014 – Present*  
– Research Lab: <http://www.biomachineslab.com>
- **Tenured Assistant Professor** Dec. 2007 – Present  
*ISTA, University of Lisbon (ISCTE-IUL)* *Lisbon, Portugal*  
– *Web*: <http://home.iscte-iul.pt>  
– *Research*: artificial intelligence, robotics, swarm intelligence, dependability  
– *Teaching*: autonomous robotics, concurrent and distributed programming, object-oriented programming, software engineering.  
– *Management*:  
\* Director of the Bachelor in informatics engineering (2011–2012).  
\* Member of Scientific Commission of the Doctoral Program (2016–now)
- **Ocean Swarm** Lisbon, Portugal  
*Founder and CEO* *Mar. 2016 – Sep. 2016*  
– High-tech start-up: <http://www.oceanswarm.com>
- **PhD student, Marie Curie PhD Grant** Oct. 2004 – Nov. 2007  
*IRIDIA-CoDE, Université Libre de Bruxelles* *Brussels, Belgium*  
– *Web*: <http://iridia.ulb.ac.be>
- **Research Engineer** Aug. 2002 – Aug. 2004  
*Universidade de Coimbra/Critical Software* *Coimbra, Portugal*  
– *Web*: <http://www.criticalsoftware.com>  
– *Area*: Parallel and distributed computing, dependability, message passing interface (MPI)  
– *Responsibilities*: Software development, research, technical management, responsible for the Linux product line (WMPI II).
- **Technical lead** Jul. 2001 – Mar. 2002  
*Benefiction A/S* *Aalborg, Denmark*

- *Area:* Web-portal with CM, forums and so on.
- *Responsibilities:* Project management and software development
- **Software Developer, Lead Developer** Sept. 1998 – Jun. 2001  
*AM Production/AM3D* *Aalborg, Denmark*
  - *Web:* <http://www.amproduction.dk>
  - *Area:* Multimedia, 3D acoustics, defense, R&D
  - *Responsibilities:* Software development
- **Technical Support** Jul. 1997 – Jun. 1998  
*Nordjyllands Amt* *Aalborg, Denmark*
  - *Area:* Installation and maintenance of ICT infrastructure.
  - *Responsibilities:* Technical support
- **Software Developer** Jan. 1992 – Apr. 1992  
*InterActivation* *Silkeborg, Denmark*
  - *Area:* PC Games
  - *Responsibilities:* Software development

## Teaching Experience

- |      |  |   |
|------|--|---|
| TE22 | <b>Software Engineering II (ESII)</b><br><i>3rd-year course, ISTA, University Institute of Lisbon</i><br>– Course coordinator. | Jan. 2017 – Jun. 2017<br><i>Lisbon, Portugal</i>  |
| TE21 | <b>Software Engineering I (ESI)</b><br><i>3rd-year course, ISTA, University Institute of Lisbon</i><br>– Course coordinator.   | Sept. 2016 – Jan. 2017<br><i>Lisbon, Portugal</i> |
| TE20 | <b>Object-Oriented Programming (POO)</b><br><i>1st-year course, ISTA, University Institute of Lisbon</i>                       | Feb. 2016 – Jun. 2016<br><i>Lisbon, Portugal</i>  |
| TE19 | <b>Software Engineering I (ESI)</b><br><i>3rd-year course, ISTA, University Institute of Lisbon</i>                            | Sept. 2015 – Jan. 2016<br><i>Lisbon, Portugal</i> |
| TE18 | <b>Object-Oriented Programming (POO)</b><br><i>1st-year course, ISTA, University Institute of Lisbon</i>                       | Feb. 2015 – Jun. 2015<br><i>Lisbon, Portugal</i>  |
| TE17 | <b>Software Engineering I (ESI)</b><br><i>3rd-year course, ISTA, University Institute of Lisbon</i><br>– Course coordinator.   | Sept. 2014 – Jan. 2015<br><i>Lisbon, Portugal</i> |
| TE16 | <b>Object-Oriented Programming (POO)</b><br><i>1st-year course, ISTA, University Institute of Lisbon</i>                       | Feb. 2014 – Jun. 2014<br><i>Lisbon, Portugal</i>  |
| TE15 | <b>Software Engineering I (ESI)</b><br><i>3rd-year course, ISTA, University Institute of Lisbon</i>                            | Sept. 2013 – Jan. 2014<br><i>Lisbon, Portugal</i> |

TE14	<b>Concurrent and Distributed Programming (PCD)</b> <i>2nd-year course, DCTI, University Institute of Lisbon</i>	Sept. 2013 – Jan. 2014 <i>Lisbon, Portugal</i>
TE13	<b>Software Engineering I (ESI)</b> <i>3rd-year course, DCTI, University Institute of Lisbon</i> – Course coordinator, developed new course material, assignments, and semi-automatic correction tools. – Instructed a total of 213 students single-handedly, with a total of 189 evaluated.	Sept. 2012 – Jan. 2013 <i>Lisbon, Portugal</i>
TE12	<b>Concurrent and Distributed Programming (PCD)</b> <i>2nd-year course, DCTI, University Institute of Lisbon</i>	Sep. 2011 – Jan. 2012 <i>Lisbon, Portugal</i>
TE11	<b>Introduction to Autonomous Mobile Robots (IAR)</b> <i>Master course, DCTI, University Institute of Lisbon</i> Lisbon, Portugal – Course coordinator.	Feb. 2011 – Jun. 2011 <i>Lisbon, Portugal</i>
TE10	<b>Object-Oriented Programming (POO)</b> <i>1st-year course, DCTI, University Institute of Lisbon</i>	Feb. 2011 – Jun. 2011 <i>Lisbon, Portugal</i>
TE9	<b>Concurrent and Distributed Programming (PCD)</b> <i>2nd-year course, DCTI, University Institute of Lisbon</i>	Sep. 2010 – Jan. 2011 <i>Lisbon, Portugal</i>
TE8	<b>Introduction to Autonomous Mobile Robots (IAR)</b> <i>Master course, DCTI, University Institute of Lisbon</i> – Created, planned, and coordinated the course.	Feb. 2010 – Jun. 2010 <i>Lisbon, Portugal</i>
TE7	<b>Software Engineering II (ESII)</b> <i>3rd-year course, DCTI, University Institute of Lisbon</i>	Feb. 2010 – Jun. 2010 <i>Lisbon, Portugal</i>
TE6	<b>Concurrent and Distributed Programming (PCD)</b> <i>2nd-year course, DCTI, University Institute of Lisbon</i>	Sep. 2009 – Jan. 2010 <i>Lisbon, Portugal</i>
TE5	<b>Software Engineering I (ESI)</b> <i>3rd-year course, DCTI, University Institute of Lisbon</i>	Feb. 2009 – Jun. 2009 <i>Lisbon, Portugal</i>
TE4	<b>Software Engineering II (ESII)</b> <i>3rd-year course, DCTI, University Institute of Lisbon</i>	Feb. 2009 – Jun. 2009 <i>Lisbon, Portugal</i>
TE3	<b>Concurrent and Distributed Programming (PCD)</b> <i>2nd-year course, DCTI, University Institute of Lisbon</i>	Sep. 2008 – Jan. 2009 <i>Lisbon, Portugal</i>
TE2	<b>Software Engineering I (ESI)</b> <i>3rd-year course, DCTI, University Institute of Lisbon</i>	Feb. 2008 – Jun. 2008 <i>Lisbon, Portugal</i>
TE1	<b>Software Engineering II (ESII)</b> <i>3rd-year course, DCTI, University Institute of Lisbon</i>	Feb. 2008 – Jun. 2008 <i>Lisbon, Portugal</i>

## Research Projects

- CAPACITIE-Project** Jul. 2015 – present

  - *EC FP7 Marie Curie Initial Training Network project, 16 partners* *48 months*

    - *Reference: FP7-PEOPLE-2013-ITN*
    - *Role: Local coordinator*
    - *Coordinator: Alistair Boxall, University of York*
    - *Funding: 3.5 mEUR*
    - *Objective: The overall aim of the CAPACITIE project is to produce a new generation of researchers that not only have the skills to develop and apply cutting-edge technologies to monitor pollutants in the natural environment but also have a detailed understanding of the needs of users of monitoring data and of the social and ethical issues around the adoption and use of selected technologies.*
  
- Control of Aquatic Drones for Maritime Tasks** Apr. 2014 – Jul. 2015

  - **(CORATAM)**

    - FCT project, 8 researchers* *15 months*

      - *Reference: EXPL/EEIAUT/0329/2013*
      - *Role: Principal researcher*
      - *Coordinator: Anders Lyhne Christensen, ISCTE-IUL/IT*
      - *Funding: 47 kEUR*
      - *Objective: The sea represents one of Portugal’s main resources. Novel ways of exploring and exploiting maritime opportunities are of particular interest given the proposed expansion of Portugal’s continental shelf, which is expected to be ratified by the UN in 2014. Collectives of aquatic drones have the potential to take on essential tasks such as prospecting sites for aquaculture, environmental monitoring, sea life localization, bridges inspection, sea border patrolling, and so on. Many of these tasks require distributed sensing, scalability, and robustness to faults, which can be facilitated by collectives of robots with decentralized control based on principles of selforganization [Bonabeau99]. In this project, we explore the applicability of a novel hybrid approach to the synthesis of control systems for a collective of aquatic drones.*
  
- Heterogeneous Ad-hoc Network for the Coordination of Aquatic Drones (HANCAD)** Apr. 2014 – Mar. 2016

  - **Aquatic Drones (HANCAD)**

    - Internal IT project, 15 researchers* *24 months*

      - *Reference: PEst-OE/EEI/LA0008/2013*
      - *Role: Principal researcher*
      - *Coordinator: Anders Lyhne Christnesen, ISCTE-IUL/IT*
      - *Funding: 40 kEUR*
      - *Objective: In this project, we will design, implement, and test a novel network architecture that enables decentralized coordination between autonomous drones, and to maintain communication links between the drone collective and a base station. We will study a heterogeneous network architecture comprised of (i) low-range and low-power communication technologies (ZigBee, Wi-Fi) that enable drones to communicate and coordinate with their neighbors, and (ii) long-range technologies (3G/GPRS) that enable a subset of the drones with extra large batteries to relay messages to a base station that could be located on land or at sea.*

- Remote Piloted Semi-Autonomous Aerial Surveillance** Jan. 2012 – Dec. 2013
- **System Using Terrestrial Wireless Networks (SAAS)** 24 months  
*IT project, 12 researchers*
    - *Reference:* PEst-OE/EEI/LA0008/2011.
    - *Role:* Researcher
    - *Coordinator:* Nuno Souto, ISCTE-IUL/IT
    - *Funding:* Instituto de Telecomunicações, amount: 40 kEUR
    - *Objective:* The main goal of SAAS is to develop an unmanned aerial vehicle (UAV) which can be piloted from a remote location and has some level of autonomy using terrestrial wireless networks. It is an objective of the project to develop a system that is mostly independent of a specific vehicle model or design so that it can be easily incorporated into any conventional radio controlled vehicle (helicopters, propelled airplanes, glider, etc) as long as it has sufficient payload capability to carry the equipment. The vehicle could then be chosen according to the specific application desired, which could allow the potential use of the system on fast/effective forest fire detection, search and rescue operations, law enforcement (surveillance, pursuit, crowd control), aerial photography/video, emergency management support, engineering and construction inspections, remote sensing (electromagnetic spectrum sensors, chemical sensors), and military and police force operations
  
  - **Autonomous Service-Component Ensembles (ASCENS)** Oct. 2010 – Sep. 2014 48 months  
*EU FP7 IP project, 12 partners*
    - *Reference:* ICT-2009.8.5 257414
    - *Role:* Associate researcher
    - *Coordinator:* Martin Wirsing, LMU Munich
    - *Funding:* EU contribution: 5.3 million euro, (total cost: 7.21 million euro).
    - *Objective:* Self-aware, self-adaptive and self-expressive autonomic components, running within environments which are called “ensembles”, have been proposed to handle open-ended, highly parallel, massively distributed systems that can span millions of nodes with complex interactions and behaviors. The goal of the ASCENS project is to build ensembles in a way that combines the maturity and wide applicability of traditional software engineering approaches with the assurance about functional and non-functional properties provided by formal methods and the flexibility, low management overhead, and optimal utilization of resources promised by autonomic, adaptive, self-aware systems.
  
  - From Bio-Inspired to Institutional-Inspired Collective** Feb. 2010 – Jan. 2013
  - **Robotics (BioInstBots)** 36 months  
*FCT project*
    - *Reference:* FCT PTDC/EEA-CRO/104658/2008
    - *Role:* Scientific management board member and participating researcher
    - *Coordinator:* Pedro M. U. A. Lima, ISR/IST
    - *Partners:* IGC/FCG (PT), ISR
    - *Funding:* 100k euro



- *Objective:* We seek to study and formalise laws that govern collective systems with the aim of synthesising systems of relatively simple robots that display complex behavior. In order to achieve this endeavour, we will study both biological systems and social systems. From biology, we will focus on cell populations. A single cell is relatively simple when compared with a cell population such as a biological creature. While from sociology, we will focus on institutional economics (at the macro level, the agents can be treated as simple entities, no matter how sophisticated they may be at the micro level). Our objective is to bring together theories, ideas and inspiration from institutional economics and cell biology under a common formal framework for large robot populations modelling and analysis.

- **Swarmanoid** Oct. 2006 – Sep. 2010  
*EU FP6 FET-OPEN project* *48 months*
  - *Reference:* IST-022888
  - *Role:* Researcher (1 year)
  - *Coordinator:* Marco Dorigo, IRIDIA-CoDE,
  - *Partners:* IRIDIA-CoDE, IDSIA, EPFL-LSRO, EPFL-LIS, CNR-ISTC
  - *Funding:* EU contribution: 2.5 million euro (total cost: 2.73 million euro)
  - *Objective:* The main scientific objective of this research project is the design, implementation and control of a novel distributed robotic system. The system will be made up of heterogeneous, dynamically connected, small autonomous robots. Collectively, these robots will form what we call a swarmanoid. The swarmanoid that we intend to build will be comprised of numerous (about 60) autonomous robots of three types: eye-bots, hand-bots, and foot-bots.

- **COMPUtational intelligence methods for COMPLEX SYS-** Oct. 2004 – Oct. 2007  
**tems (COMP<sup>2</sup>SYs)**  
*EU FP6 Marie Curie Actions* *36 months*
  - *Reference:* MEST-CT-2004-505079
  - *Role:* PhD Student/Researcher
  - *Coordinator:* Marco Dorigo, IRIDIA-CoDE
  - *Training staff:* , Marco Dorigo, Hugues Bersini, Gianluca Bontempi, Jean-Louis Deneubourg, Mauro Birattari, Elio Tuci, Tom Lenaerts, Thomas Stuetzle
  - *Objective:* The COMP2SYS Early Stage Training project focuses on the training of early stage researchers to the use of Computational Intelligence techniques for the treatment of complex systems in science and engineering. The programme aims at developing the knowledge and skills necessary to solve complex problems using the powerful emergent methods and tools of Computational Intelligence, examples of which are swarm intelligence, machine learning and evolutionary computation. COMP2SYS is designed for early stage researchers from a wide range of disciplines, to enable them to apply these important technologies effectively within their own disciplines.

- **Swarm-bots: Swarms of self-assembling artifacts** Oct. 2004 – Sep. 2005  
*EU FP5 FET-OPEN* *11 months*
  - *Reference:* IST-2000-31010

- *Role:* PhD Student/Researcher
- *Coordinator:* Marco Dorigo, IRIDIA-CoDE
- *Objective:* The main scientific objective of the Swarm-bots project is to study a novel approach to the design and implementation of self-organising and self-assembling artefacts. This novel approach finds its theoretical roots in recent studies in swarm intelligence, that is, in studies of the self-organising and self-assembling capabilities shown by social insects and other animal societies.

- **Soil Moisture and Ocean Salinity** Ongoing  
*ESA project*
  - *Reference:* ESA SMOS mission
  - *Role:* HPC Consultant (3 months)
  - *Objective:* Parallel ground processing of satellite data from the European Space Agency’s SMOS mission. Research.

## Commercial Projects

- **WMX A fault-tolerant message passing library** 2003  
*Software developer* *4 months*
- **WMPI II – an implementation of MPI 2.0 for Windows and Linux clusters** 2002–2004  
*Lead developer and responsible for the Linux product line* *24 months*
- **Tiing – A web portal with CM and CRM** 2001–2002  
*Technical lead* *14 months*
- **DieselPower – Realtime 3D sound API** 1999–2001  
*Lead developer* *18 months*
- **Experimental Platform – 3D sound test software and API** 1999  
*Software developer* *5 months*
- **Hvem Byggede Danmark – advanced encyclopedia CD-ROM** 1998-1999  
*Lead developer, total budget: 750 kEUR* *10 months*

## Editorial boards, Evaluation activities, Organization, and Committees

- **Editorial Boards**

EB4 Handbook of Research on Design, Control, and Modeling of Swarm Robotics, IGI Global, 2015, ISBN13: 9781466695726.

EB3 Frontiers in Robotics and AI, published by EPFL (since March 2014)

EB2 Applied Intelligence, published by Springer (since November 2013)

EB1 Swarm Intelligence Journal, published by Springer (since March 2013)

## • Evaluation and Refereeing Activities

- EV11 Expert for the Polish National Centre for Research and Development (NCBR) – project proposals (2017)
- EV10 Expert on the European Commission’s Horizon 2020 COMPET-2017 call – project proposals (2017)
- EV9 Referee for South Africa’s National Research Foundation (NRF), reviewer of research chair proposal (2016)
- EV8 Expert on the European Commission’s Horizon 2020 COMPET-2016 call – project proposals (2016)
- EV7 Expert on the European Commission’s Horizon 2020 COMPET-2015 call – project proposals (2015)
- EV6 Referee for South Africa’s National Research Foundation (NRF), reviewer on the quality of research output (2015)
- EV5 Referee for Netherlands Organisation for Scientific Research (NWO) – postdoctoral fellowship (2015)
- EV4 Referee for CHIST-ERA Call 2014 – project proposals (2015)
- EV3 Expert on the European Commission’s Horizon 2020 COMPET-2014 call – project proposals (2014)
- EV2 Referee for le Fonds de la Recherche Scientifique - FNRS project proposals (declined due to conflict of interest)
- EV1 Referee for Research Foundation Flanders (FWO) – postdoctoral fellowships (2014, 2015)

## • Conference Organization

- CO4 Associate editor for IROS’17: 2017 IEEE/RSJ International Conference on Intelligent Robots and Systems.
- CO3 Associate editor for IROS’16: 2016 IEEE/RSJ International Conference on Intelligent Robots and Systems.
- CO2 Associate editor for IROS’15: 2015 IEEE/RSJ International Conference on Intelligent Robots and Systems.
- CO1 Publication chair for ANTS’12: International Conference on Swarm Intelligence

## • Program Committees

- PC53 ROBOT’17: Third Iberian Robotics Conference, November 22–24, 2017, Sevilla, Spain
- PC52 IROS’17: 2017 IEEE/RSJ International Conference on Intelligent Robots and Systems, September 24–28, 2017, Vancouver, Canada
- PC51 MOD’17: 3rd International Conference on Machine Learning, Optimization and Big Data, Pisa, September 17–21, Italy
- PC50 AAAI’17: AAAI Conference on Artificial Intelligence, Video Competition, February 4–9, 2017, San Francisco, California, USA
- PC49 EvoAPPLICATIONS’17: International Conference on the Applications of Evolutionary Computation, April 19– 21, 2017, Amsterdam, Netherlands
- PC48 IROS’16: 2016 IEEE/RSJ International Conference on Intelligent Robots and Systems, October 9–14, 2016, Daejeon, Korea
- PC47 ANTS’16: Tenth International Conference on Swarm Intelligence, September 7–9, Brussels, Belgium
- PC46 DARS’16: 13th International Symposium on Distributed Autonomous Robotic Systems, November 7–9, 2016, London, UK
- PC45 GECCO’16: Genetic and Evolutionary Computation Conference, July 20-24, 2016, Denver, Colorado, USA
- PC44 SAB’16: The 14th International Conference on the Simulation of Adaptive Behavior, August 23–26, 2016, Aberystwyth, UK
- PC43 AAAI’16: AAAI Conference on Artificial Intelligence, Video Competition, February 12–17, 2016, Phoenix, Arizona, USA

- PC42 EvoAPPLICATIONS'16: International Conference on the Applications of Evolutionary Computation, March 30–April 1, 2016, Porto, Portugal
- PC41 ICAART'16: International Conference on Agents and Artificial Intelligence, February 24–26, 2016, Rome, Italy
- PC40 ICPRAM'16: International Conference on Pattern Recognition Applications and Methods, February 24–26, 2016, Rome, Italy
- PC39 IROS'15: 2015 IEEE/RSJ International Conference on Intelligent Robots and Systems, September 28–October 1, 2015, Hamburg, Germany
- PC38 ConfTele'15: 10th Conference on Telecommunications, September 17–18, Aveiro, Portugal
- PC37 TAROS'15: Towards Autonomous Robotic Systems, September 8–10, 2015, Liverpool, UK
- PC36 LM'15: International Conference on Biomimetics and Biohybrid Systems, July 28–31 2015, La Pedrera Barcelona, Spain
- PC35 GECCO'15: Genetic and Evolutionary Computation Conference, July 11–15, 2015, Madrid, Spain
- PC34 EvoAPPLICATIONS'15: International Conference on the Applications of Evolutionary Computation, April 8–10, 2015, Copenhagen, Denmark
- PC33 AAI'15: AAI Conference on Artificial Intelligence, Video Competition, January 25–30, 2015, Austin, Texas, USA
- PC32 ICAART'15: International Conference on Agents and Artificial Intelligence, January 10–12, 2015, Lisbon, Portugal
- PC31 TAROS'14: Towards Autonomous Robotic Systems, September 1–3, 2014, Birmingham, UK
- PC30 LM'14: International Conference on Biomimetics and Biohybrid Systems, July 30–August 1, 2014, Milan, Italy
- PC29 AAI'14: AAI Conference on Artificial Intelligence, Video Competition, July 27–31, 2014, Quebec City, Canada
- PC28 FSKD'2014: International Conference on Fuzzy Systems and Knowledge Discovery, 19–21 August, Xiamen, China
- PC27 ICT'14: International Conference on Telecommunication, May 5–6, 2014, Lisbon, Portugal
- PC26 GECCO'14: Genetic and Evolutionary Computation Conference, July 12–16, 2014, Vancouver, Canada
- PC25 AAMAS'14: International Conference on Autonomous Agents and Multiagent Systems, May 5–9, 2014, Paris, France
- PC24 ICAART'14: International Conference on Agents and Artificial Intelligence, March 6–8, 2014, Loire Valley, France
- PC23 IJCAI'13: International Joint Conference on Artificial Intelligence, August 3–9, 2013, Beijing, China
- PC22 LM'13: International Conference on Biomimetics and Biohybrid Systems, July 29–August 2, 2013, London, UK
- PC21 OSDOC'13: Workshop Open Source and Design of Communication, July 11, 2013, Lisbon, Portugal
- PC20 TAROS'13: Towards Autonomous Robotic Systems Conference, August 28–30, 2013, Oxford, England
- PC19 AAI'13: AAI Conference on Artificial Intelligence, Video Competition, July 14–18, 2013, Washington, USA
- PC18 ECAL'13: European Conference on Artificial Life, September 2–6, 2013, Taormina, Italy
- PC17 ICAART'13: International Conference on Agents and Artificial Intelligence, February 15–17, 2013, Barcelona, Spain
- PC16 DARS'12: International Symposium on Distributed Autonomous Robotic Systems, November 8–11, 2012, Baltimore, MD, USA
- PC15 AAI'12: AAI Conference on Artificial Intelligence, Video Competition, July 22–26, Toronto, Canada
- PC14 TAROS'12: Towards Autonomous Robotic Systems, August 20–25, 2012, Bristol, England
- PC13 OSDOC'12: Workshop Open Source and Design of Communication June 11, 2012, Lisboa, Portugal
- PC12 LM'12: International Conference on Biomimetics and Biohybrid Systems, July 9–12, 2012, Barcelona, Spain

- PC11 ICAART'12: International Conference on Agents and Artificial Intelligence, February 6-8, 2012, Vilamoura, Portugal
- PC10 ECCS'11: European Conference on Complex Systems, Conference, September 12-16, 2011, Vienna, Austria
- PC9 ECAL'11, the European Conference on Artificial Life, August 8-12, 2011, Paris, France
- PC8 ICNC'11-FSKD'11: The 7th International Conference on Natural Computation and The 8th International Conference on Fuzzy Systems and Knowledge Discovery, July 26-28, 2011, Shanghai, China
- PC7 TAROS'11: Towards Autonomous Robotic Systems, August 31-September 2, 2011, Sheffield, England
- PC6 DARS'10: International Symposium on Distributed Autonomous Robotic Systems, November 1-3, 2010, Lausanne, Switzerland
- PC5 ECCS'10 European Conference on Complex Systems, September 13-17, 2010, Lisbon, Portugal
- PC4 ANTS'10: 7th International Conference on Swarm Intelligence, September 8-10, 2010, Brussels, Belgium
- PC3 IJCAI'09: International Joint Conference on Artificial Intelligence, Workshop on Artificial Intelligence in Space, July 17-18, 2009, Pasadena, CA, USA
- PC2 IJCAI'08: International Joint Conference on Artificial Intelligence, Video Competition, July 11-17, 2009, Pasadena, CA, USA
- PC1 AAAI'08: AAAI Conference on Artificial Intelligence, Video Competition, July 13-17, 2008, Chicago, Illinois, USA

- Reviewer

Reviewed papers for the following international journals: IEEE Transactions on Robotics. IEEE Robotics & Automation Magazine. IEEE Transactions on Evolutionary Computation. Adaptive Behavior. Sensors Journal. IEEE Transactions on Systems, Man, and Cybernetics, Part A: Systems and Humans. Swarm Intelligence Journal. Robotica Journal. Neural Computation and Applications Journal. Paladyn - Journal of Behavioral Robotics. Journal of Autonomous Agents and Multiagent Systems. Connection Science. International Journal of Advanced Robotic Systems, Mathematical Problems in Engineering. Applied Intelligence, Integrated Computer-Aided Engineering.

Reviewed more than 200 papers submitted to international conferences.

## Supervision and Juries

- Post-doctoral Students

- Danesh Tarapore, 2010-2013, grant: PTDC/EEA-CRO/104658/2008 (co-supervisor)
- Miguel Duarte, July 2016-*now*, grant: UID/EEA/50008/2013 (main supervisor)

- Doctoral Students as Main Supervisor

- Miguel Duarte, thesis title: “Engineering Evolutionary Control for Real-world Robotic Systems”, successfully defended (with highest distinction) April 2016, FCT grant: SFRH/BD/76438/2011
  - \* Paper of Excellence Award at IEEE ICDL-EpiRob 2012, IC34
  - \* Won the Fraunhofer Challenge 2016 in the PhD category (3,000 EUR).
  - \* Best PhD Thesis Award by the Portuguese Robotics Society
- Fernando Goulart da Silva, thesis title: “Evolutionary Online Behaviour Learning and Adaptation in Robotic Systems”, successfully defended (with highest distinction) June 2017, FCT grant: SFRH/BD/89573/2012

- \* Best Paper Award at EvoApplications 2016, IC57
- \* Best Student Paper Award at IEEE SASO 2016, IC63
- Jorge Carvalho Gomes, thesis title: “Novel Approaches to Cooperative Coevolution of Heterogeneous Multiagent Systems”, successfully defended (with highest distinction) May 2017, FCT grant: SFRH/BD/89095/2012
  - \* Prize for best PhD student in informatics at Lisbon University 2016 (Maxdata Excelência em Informática)
  - \* Prize for best PhD student in informatics at Lisbon University 2014 (Maxdata Excelência em Informática)
  - \* Best student presentation at the workshop on Nature-inspired Techniques held at PPSN 2014
- Gustavo Manuel Dias da Costa Martins, 2018 (est.), FCT grant: SFRH/BD/94432/2013

#### • Master Students

- Hélio Alexandre Dias da Silva, Master thesis: “Conillon – Distributed Computing platform for Desktop Grids”, July, 2011, grade: 18/20 (co-supervisor)
- André Gonzalez Amor de Bastos, Master thesis: “Experiments in evolutionary collective robotics”, November, 2011, grade: 17/20 (co-supervisor)
- Miguel Duarte, Master thesis: “Hierarchical Evolution of Robotic Controllers for Complex Tasks”, July, 2012, grade: 20/20 (main supervisor)
- Fernando Goulart da Silva, Master thesis: “Online Evolution of Robot Behaviour”, November, 2012, grade: 19/20, (main supervisor)
- Jorge Carvalho Gomes, Master thesis: “Novelty Search in Swarm Robotics”, November, 2012, grade: 20/20 (main supervisor)
- João Paulo Ribeiro Alves, Master thesis: “Simulação, programa cão e evolu cão de comportamentos para um Robot Lego NXT”, June 2013, grade: 17/20 (co-supervisor)
- Amr Hamouda, “Waste Removal End-effector for an Autonomous Swarm of Aquatic Drones”, Sapienza, Facolta di Informatica e Sistemistica, No. Matricola: 1505046, January, 2015 (co-supervisor)
- Tiago Rodrigues, Master thesis: “Sensor Modulation and Local Communication in Evolutionary Robotics”, October, 2015, grade 20/20 (main supervisor)

#### • Juries and Panels

- Álvaro Gutiérrez Martín, Universidad Politécnica de Madrid, ETSIT, Spain, PhD thesis: “Social Odometry: Distributed Location Knowledge for Swarm Robotics Based on Local Communication”, 2009, external jury member
- Duarte da Cruz Baptista Dias, ISR/IST, Portugal, Master thesis: “Barcode-based Localization of Low Capability Mobile Robots in Structured Environments”, 2012, external jury member
- Gustavo Schleyer Daza, Monash University, Australia, PhD thesis: “Self-diagnosis and Self-compensation in Autonomous Robots”, 2014, external jury member
- Paulo Roberto Almeida Moreira Costa, ISCTE-IUL, Portugal, PhD thesis: “Learning Control Knowledge by Observation in Software Agents”, 2014, internal jury member
- Alan Gregory Millard, The University of York, UK, PhD thesis: “Exogenous Fault Detection in Swarm Robotic Systems – An Approach Based on Internal Models”, 2016, external jury member
- Eduardo Matallanas de Ávila, Universidad Politécnica de Madrid, ETSIT, Spain, PhD thesis: “Artificial Recurrent Neural Networks for the Distributed Control of Electrical Grids with Photovoltaic Electricity”, 2016, external jury member
- David Walter Figueira Jardim, ISCTE-IUL, Portugal, PhD thesis: “Human Activity Recognition and Prediction”, expected: 2017, internal jury member

#### • Mentoring

- IEEE Robotics and Automation (RAS) Student Chapter Advisor, 2013 – Present.
- AIESEC Lead mentor, 2012 – 2013.

## Publications

- International Journal Publications

- IJ28 D. Tarapore, A. L. Christensen, and J. Timmis (2017), "Generic, scalable and decentralized fault detection for robot swarms", PLOS ONE 12(8):e0182058.
- IJ27 F. Silva, L. Correia, and A. L. Christensen (2017), "Evolutionary Online Behaviour Learning and Adaptation in Real Robots", Royal Society Open Science 4(7):160938.
- IJ26 M. Duarte, J. Gomes, S. Oliveira, and A. L. Christensen (2017), "Evolution of Repertoire-based Control for Robots with Complex Locomotor Systems", IEEE Transactions on Evolutionary Computation, DOI: 10.1109/TEVC.2017.2722101, *in press*.
- IJ25 F. Silva, L. Correia, and A. L. Christensen (2017), "Hyper-Learning Algorithms for Online Evolution of Robot Controllers", ACM Transactions on Autonomous and Adaptive Systems, *in press*.
- IJ24 J. Gomes, P. Mariano, and A. L. Christensen (2017), "Novelty-driven Cooperative Coevolution", Evolutionary Computation 25(2):275–307.
- IJ23 F. Silva, L. Correia, and A. L. Christensen (2017), "Evolutionary Online Learning in Multirobot Systems", AI Matters, 3(1):23–24.
- IJ22 F. Silva, L. Correia, and A. L. Christensen (2016), "Evolutionary Robotics", Scholarpedia, 11(7):33333.
- IJ21 M. Duarte, V. Costa, J. Gomes, T. Rodrigues, F. Silva, S. Oliveira, and A. L. Christensen (2016), "Evolution of Collective Behaviors for a Real Swarm of Aquatic Surface Robots", PLoS ONE 11(3):e0151834.
- IJ20 J. Gomes, P. Mariano, and A. L. Christensen (2016), "Challenges in Cooperative Coevolution of Physically Heterogeneous Robot Teams", Natural Computing, *in press*.
- IJ19 F. Silva, M. Duarte, L. Correia, S. Oliveira, and A. L. Christensen (2016), "Open Issues in Evolutionary Robotics", Evolutionary Computation, 24(2): 205–236.
- IJ18 F. Silva, P. Urbano, L. Correia, and A. L. Christensen (2015), "odNEAT: An Algorithm for Decentralised Online Evolution of Robotic Controllers", Evolutionary Computation, 23(3):421–449.
- IJ17 N. Mathews, G. Valentini, A. L. Christensen, R. O'Grady, A. Brutschy, M. Dorigo (2015), "Spatially Targeted Communication in Decentralized Multirobot Systems", Autonomous Robots, 38(4):439–457.
- IJ16 D. Tarapore, P. Lima, J. Carneiro, and A. L. Christensen (2015), "To err is robotic, to tolerate immunological: fault detection in multirobot systems", Bioinspiration & Biomimetics 10(1):01614.
- IJ15 M. Duarte, S. Oliveira, and A. L. Christensen (2015), "Evolution of Hybrid Robotic Controllers for Complex Tasks", International Journal of Intelligent and Robotic Systems, 78(3):463–484.
- IJ14 J. Gomes, P. Urbano, and A. L. Christensen (2014), "PMCNS: Using a Progressively Stricter Fitness Criterion to Guide Novelty Search", International Journal of Natural Computing Research 4(2):1–19, **invited paper**.
- IJ13 F. Silva, P. Urbano, and A. L. Christensen (2014), "Online Evolution of Adaptive Robot Behaviour", International Journal of Natural Computing Research 4(2):59–77, **invited paper**.
- IJ12 J. Gomes, P. Urbano, and A. L. Christensen (2013), "Evolution of Swarm Robotics Systems with Novelty Search", Swarm Intelligence, 7(2-3):115–144.
- IJ11 M. Dorigo, M. Birattari, C. Blum, A. L. Christensen, A. Engelbrecht, R. Gross, and T. Stuetzle (2013), "ANTS 2012 Special Issue", Guest Editorial, Swarm Intelligence, 7(2-3):79–81.
- IJ10 C. Pinciroli, R. O'Grady, A. L. Christensen, M. Birattari, M. Dorigo (2013), "Parallel Formation of Differently Sized Groups in a Robotic Swarm", SICE Journal of the Society of Instrument and Control Engineers, 52(3):213–226, **invited paper**.
- IJ9 M. Dorigo, D. Floreano, L. M. Gambardella, F. Mondada, S. Nolfi, T. Baaboura, M. Birattari, M. Bonani, M. Brambilla, A. Brutschy, D. Burnier, A. Campo, A. L. Christensen, A. Decugnière, G. Di Caro, F. Ducatelle, E. Ferrante, A. Förster, J. Martinez Gonzales, J. Guzzi, V. Longchamp, S. Magnenat, N. Mathews, M. Montes de Oca, R. O'Grady, C. Pinciroli, G. Pini, P. Réturnaz, J. Roberts, V. Sperati, T. Stirling, A. Stranieri, T. Stützle, V. Trianni, E. Tuci, A. E. Turgut and F. Vaussard (2013), "Swarmanoid: a Novel Concept for the Study of Heterogeneous Robotic Swarms", IEEE Robotics & Automation Magazine, 20(4):60–71.

- IJ8 A. L. Christensen (2012), "Self-reconfigurable Robots – An Introduction (book review)". *Artificial Life* 18(2):237–240.
  - IJ7 R. O’Grady, R. Gross, A. L. Christensen and M. Dorigo (2010), "Self-Assembly Strategies in a Group of Autonomous Mobile Robots". *Autonomous Robots* 28(4):439–455.
  - IJ6 A. L. Christensen, R. O’Grady, and M. Dorigo (2009), "From Fireflies to Fault Tolerant Swarms of Robots". *IEEE Transactions on Evolutionary Computation* 13(4):754–766.
  - IJ5 C. Ampatzis, E. Tuci, V. Trianni, A. L. Christensen and M. Dorigo (2009), "Evolution of Autonomous Self-Assembly in Homogeneous Robots". *Artificial Life* 15(4):465–484.
  - IJ4 A. L. Christensen, R. O’Grady, and M. Dorigo (2008), "SWARMORPH-script: A Language Morphology Generation in Autonomous Robots". *Swarm Intelligence*. 2(2-4):143–165.
  - IJ3 R. O’Grady, A. L. Christensen, and M. Dorigo (2008), "SWARMORPH: Multi-Robot Morphogenesis Using Directional Self-Assembly". *IEEE Transactions on Robotics* 25(3):738–743.
  - IJ2 A. L. Christensen, R. O’Grady, M. Birattari and M. Dorigo (2008), "Fault Detection in Autonomous Robots Based on Fault Injection and Learning". *Autonomous Robots* 24(1):49–67.
  - IJ1 A. L. Christensen, R. O’Grady, and M. Dorigo (2007), "Morphology Control in a Multirobot System". *IEEE Robotics & Automation Magazine*. 14(4):18–25.
- Edited Books and Special Issues
    - EB2 M. Dorigo, M. Birattari, C. Blum, A. L. Christensen, A. Engelbrecht, R. Gross, and T. Stuetzle (2013), "ANTS 2012 Special Issue", *Swarm Intelligence*, 7(2-3).
    - EB1 Proceedings of the 8th International Conference on Swarm Intelligence (ANTS), Brussels, Belgium, September 12-14, 2012, LNCS volume 7461, editors: Marco Dorigo, Mauro Birattari, Christian Blum, Anders Lyhne Christensen, Andries P. Engelbrecht, Roderich Gross, and Thomas Stutzle, Springer, Berlin, Germany. ISBN 978-3-642-32650-9
- Book Chapters
    - BC4 T. Rodrigues, M. Duarte, M. Figueiró, V. Costa, S. M. Oliveira, and A. L. Christensen, "Overcoming Limited Onboard Sensing in Swarm Robotics through Local Communication", *Transactions on Computational Collective Intelligence XX (TCCI)*, LNCS 9420, Springer, Berlin, Germany, ISBN 978-3-319-27542-0, pages 201–233.
    - BC3 F. Silva, L. Correia, and A. L. Christensen (2015), "Modelling Synchronisation in Multirobot Systems with Cellular Automata", *Robots and Lattice Automata* edited by G. Sirakoulis and A. Adamatzky, Springer International Publishing, Cham, Switzerland, ISBN 978-3-319-10923-7, Chapter 12, pages 267–293
    - BC2 R. Gross, R. O’Grady, A. L. Christensen and M. Dorigo (2013). "The Swarm-bot Experience: Strength and Mobility through Physical Cooperation", *Handbook of Collective Robotics* edited by Serge Kernbach, Pan Stanford Publishing, ISBN 978-9-814-31642-2. Chapter 2, pages 49–80
    - BC1 R. O’Grady, A. L. Christensen and M. Dorigo (2013), "SWARMORPH: Morphogenesis with Self-Assembling Robots", in *Morphogenetic Engineering*, edited by Rene Doursat, Hiroki Sayama, and Olivier Michel, Springer, Berlin, Germany. ISBN 978-3-642-33901-1, Chapter 2, pages 27–60
- International Conference Videos
    - IV6 A. L. Christensen, M. Duarte, V. Costa, T. Rodrigues, J. Gomes, F. Silva, and S. Oliveira (2016), "A Sea of Robots". 30th Conference on Artificial Intelligence (AAAI-16). Phoenix, Arizona. **Won Best Robot Video Award and a "Shakey" trophy**
    - IV5 N. Mathews, A. L. Christensen, R. O’Grady, and M. Dorigo (2012), "Cooperation in a Heterogeneous Robot Swarm through Spatially Targeted Communication". *Proceedings of the 2012 International Conference on Intelligent Robots and Systems (IROS2012)*, IEEE Press, Piscataway, NJ, pages 2678–2679. **Nominated for best video**
    - IV4 M. Dorigo, D. Floreano, L. M. Gambardella, F. Mondada, S. Nolfi, T. Baaboura, M. Birattari, M. Bonani, M. Brambilla, A. Brutschy, D. Burnier, A. Campo, A. L. Christensen, A. Decugnère, G. Di Caro, F. Ducatelle, E. Ferrante, A. Förster, J. Martinez Gonzales, J. Guzzi, V. Longchamp, S. Magnenat, N. Mathews, M. Montes de Oca, R. O’Grady, C. Pinciroli, G. Pini, P. Réturnaz, J. Roberts,



V. Sperati, T. Stirling, A. Stranieri, T. Stützle, V. Trianni, E. Tuci, A. E. Turgut and F. Vaussard, "Swarmoid, The Movie". 25th Conference on Artificial Intelligence (AAAI). San Francisco, **Won Best Video Award and a "Shakey" trophy**

IV3 A. L. Christensen, R. O'Grady, and M. Dorigo (2008), "Synchronization and Fault Detection in Autonomous Robots". Proceedings of the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS). IEEE Computer Society, Los Alamitos, CA, pages: 4139-4140.

IV2 A. L. Christensen, R. O'Grady, and M. Dorigo (2007), "Morphogenesis: Shaping Swarms of Intelligent Robots (VIDEO)". Twenty-Second Conference on Artificial Intelligence (AAAI), AAAI Video Proceedings. Won the **Won best video award and a "Shakey" trophy**.

IV1 R. O'Grady, A. L. Christensen and M. Dorigo (2007), "Self-Assembly and Morphology Control in a Swarm-Bot (VIDEO)". IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS). IEEE Computer Society, Los Alamitos, CA, pages 2551-2552.

- International Conference Publications

IC64 J. Gomes, M. Duarte, P. Mariano, and A. L. Christensen (2016), "Cooperative Coevolution of Control for a Real Multirobot System", Proceedings of the 14th International Conference on Parallel Problem Solving from Nature (PPSN), Springer, Berlin, Germany, *in press*, **Nominated for Best Paper Award**.

IC63 F. Silva, L. Correia, and A. L. Christensen (2016), "Online Hyper-Evolution of Controllers in Multirobot Systems", Proceedings of the 10th IEEE International Conference on Self-Adaptive and Self-Organizing Systems (SASO). IEEE Press, Piscataway, NJ, *in press*. **Won Best Student Paper Award**.

IC62 S. M. Trenkwalder, Y. K. Lopes, A. Kolling, A. L. Christensen, R. Prodan, R. Gross (2016), "OpenSwarm: An Event-Driven Embedded Operating System for Miniature Robots", Proceedings of the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), IEEE Press, Piscataway, NJ, *in press*.

IC61 M. Duarte, J. Gomes, and A. L. Christensen (2016), "EvoRBC: Evolutionary Repertoire-based Control for Robots with Arbitrary Locomotion Complexity", Proceedings of the Genetic and Evolutionary Computation Conference (GECCO), ACM Press, New York, NY, pages 93–100.

IC60 R. Ramos, M. Duarte, S. M. Oliveira, and A. L. Christensen (2016), "Evolving Controllers for Robots with Multimodal Locomotion", From Animals to Animats 14 (SAB), Springer, Berlin, Germany, pages 340–351.

IC59 M. Duarte, V. Costa, J. Gomes, T. Rodrigues, F. Silva, S. Oliveira, and A. L. Christensen (2016), "Unleashing the Potential of Evolutionary Swarm Robotics in the Real World", Proceedings of the 2016 on Genetic and Evolutionary Computation Conference Companion (GECCO), ACM Press, New York, NY, pages 159–160.

IC58 M. Duarte, J. Gomes, V. Costa, S. Oliveira, and A. L. Christensen (2016). "Hybrid Control for a Real Swarm Robotics System in an Intruder Detection Task". Proceedings of European Conference on the Applications of Evolutionary Computation (EvoApplications, EvoRobot track), Springer, Berlin, Germany, pages 213–230.

IC57 F. Silva, L. Correia, and A. L. Christensen (2016), "Leveraging Online Racing and Population Cloning in Evolutionary Multirobot Systems". Proceedings of European Conference on the Applications of Evolutionary Computation (EvoApplications, EvoRobot track), Springer, Berlin, Germany, pages 165–180, **Best Paper Award (EvoRobot)**.

IC56 V. Costa, M. Duarte, T. Rodrigues, S. Oliveira, and A. L. Christensen (2016), "Design and Development of an Inexpensive Aquatic Swarm Robotics System". Proceedings of OCEANS 2016 - Shanghai, IEEE, pages 1–7, DOI: 10.1109/OCEANSAP.2016.7485496

IC55 M. Duarte, J. Gomes, V. Costa, T. Rodrigues, F. Silva, V. Lobo, M. M. Marques, S. Oliveira, and A. L. Christensen (2016), "Application of Swarm Robotics Systems to Marine Environmental Monitoring". Proceedings of OCEANS 2016 - Shanghai, IEEE, pages 1–8. DOI: 10.1109/OCEANSAP.2016.7485429

IC54 P. Romano, L. Nunes, A. L. Christensen, M. Duarte, and S. Oliveira (2016). "Genome Variations: Effects on the robustness of neuroevolved control for swarm robotics systems". Proceedings of Robot 2015: Second Iberian Robotics Conference, Springer, Berlin, Germany, pages 309–319.

- IC53 D. Tarapore, A. L. Christensen, and J. Timmis (2015). "Abnormality Detection in Robots Exhibiting Composite Swarm Behaviours". Proceedings of the European Conference on Artificial Life (ECAL), MIT Press, Boston, MA, pages 406–413.
- IC52 J. Gomes, P. Mariano, and A. L. Christensen (2015). "Cooperative Coevolution of Morphologically Heterogeneous Robots". Proceedings of the European Conference on Artificial Life (ECAL), MIT Press, Boston, MA, pages 312–319. **Nominated for best paper.**
- IC51 J. Gomes, P. Mariano, and A. L. Christensen (2015). "Devising Effective Novelty Search Algorithms: A Comprehensive Empirical Study". Proceedings of Genetic and Evolutionary Computation Conference (GECCO), ACM Press, New York, NY, pages 943–950.
- IC50 F. Silva, L. Correia, and A. L. Christensen (2015). "R-HybrID: Evolution of Agent Controllers with a Hybridisation of Indirect and Direct Encodings". International Conference on Autonomous Agents and Multiagent Systems (AAMAS), IFAAMAS, pages 735–744.
- IC49 J. Gomes, P. Mariano, and A. L. Christensen (2015), "Cooperative Coevolution of Partially Heterogeneous Multiagent Systems", International Conference on Autonomous Agents and Multiagent Systems (AAMAS), IFAAMAS, pages 297-305.
- IC48 T. Rodrigues, M. Duarte, S. Oliveira, and A. L. Christensen (2015), "Beyond Onboard Sensors in Robotic Swarms: Local Collective Sensing through Situated Communication". Proceedings of the 7th International Conference on Agents and Artificial Intelligence (ICAART), volume 2, SciTePress, Lisboa, Portugal, pages 548–555.
- IC47 A. L. Christensen, S. Oliveira, O. Postolache, M. J. de Oliveira, S. Sargento, P. Santana, L. Nunes, F. Velez, P. Sebastião, V. Costa, M. Duarte, J. Gomes, T. Rodrigues, and F. Silva (2015), "Design of Communication and control for swarms of aquatic surface drones". Proceedings of the 7th International Conference on Agents and Artificial Intelligence (ICAART), volume 2, SciTePress, Lisboa, Portugal, pages 111-118.
- IC46 J. Gomes, P. Mariano, and A. L. Christensen (2014), "Novelty Search in Competitive Coevolution", Proceedings of the International Conference on Parallel Problem Solving from Nature (PPSN), LNCS 8672, Springer, Berlin, Germany, pages 233–242.
- IC45 M. Duarte, S. Oliveira, and A. L. Christensen (2014), "Hybrid Control for Large Swarms of Aquatic Drones", Proceedings of the Fourteenth International Conference on the Synthesis and Simulation of Living Systems (ALIFE), MIT Press, Boston, MA, pages 785–792.
- IC44 M. Duarte, F. Silva, T. Rodrigues, S. Oliveira, and A. L. Christensen (2014), "JBotEvolver: A Versatile Simulation Platform for Evolutionary Robotics", Proceedings of the Fourteenth International Conference on the Synthesis and Simulation of Living Systems (ALIFE), MIT Press, Boston, MA, pages 210–211.
- IC43 J. Gomes, P. Mariano, and A. L. Christensen (2014), "Systematic Derivation of Behaviour Characterisations in Evolutionary Robotics", Proceedings of the Fourteenth International Conference on the Synthesis and Simulation of Living Systems (ALIFE), MIT Press, Boston, MA, pages 212–219.
- IC42 M. Duarte, S. Oliveira, and A. L. Christensen (2014), "Evolution of Hierarchical Controllers for Multirobot Systems", Proceedings of the Fourteenth International Conference on the Synthesis and Simulation of Living Systems (ALIFE), MIT Press, Boston, MA, pages 657–664.
- IC41 F. Silva, M. Duarte, L. Correia, S. Oliveira, and A. L. Christensen (2014), "The Case for Engineering the Evolution of Robot Controllers", Proceedings of the Fourteenth International Conference on the Synthesis and Simulation of Living Systems (ALIFE), MIT Press, Boston, MA, pages 703–710.
- IC40 D. Tarapore, P. U. Lima, J. Carneiro, and A. L. Christensen (2014), "Optimizing the Crossregulation Model for Scalable Abnormality Detection", Proceedings of the Fourteenth International Conference on the Synthesis and Simulation of Living Systems (ALIFE), MIT Press, Boston, MA, pages 734–735.
- IC39 T. Rodrigues, M. Duarte, S. Oliveira, and A. L. Christensen (2014), "What You Choose to See is What You Get: An Experiment with Learnt Sensory Modulation in a Robotic Foraging Task", Proceedings of European Conference on the Applications of Evolutionary Computation (EvoApplications, EvoRobot track), LNCS 8602, Springer, Berlin, Germany, pages 789–804.
- IC38 F. Silva, L. Correia, and A. L. Christensen (2014), "Speeding up Online Evolution of Robotic Controllers with Macro-neurons", Proceedings of European Conference on the Applications of Evolutionary Computation (EvoApplications, EvoRobot track), LNCS 8602, Springer, Berlin, Germany, pages 765–776.

- IC37 J. Gomes, P. Mariano, and A. L. Christensen (2014), "Avoiding Convergence in Cooperative Coevolution with Novelty Search", Proceedings of the 13th International Conference on Autonomous Agents and Multiagent Systems (AAMAS), IFAAMAS, pages 1149–1156.
- IC36 J. Gomes and A. L. Christensen (2013), "Generic Behaviour Similarity Measures for Evolutionary Swarm Robotics", Proceedings of Genetic and Evolutionary Computation Conference (GECCO), ACM Press, New York, NY, pages 199–206, **Nominated for best paper**.
- IC35 D. Tarapore, A. L. Christensen, P. U. Lima, and J. Carneiro (2013), "Abnormality Detection in Multiagent Systems Inspired by the Adaptive Immune System", Proceedings of the 12th International Conference on Autonomous Agents and Multiagent Systems (AAMAS), IFAAMAS, pages 23–30.
- IC34 M. Duarte, S. Oliveira and A. L. Christensen (2012), "Hierarchical Evolution of Robotic Controllers for Complex Tasks", Proceedings of the IEEE Conference on Development and Learning and Epigenetic Robotics (ICDL-EpiRob), IEEE Press, Piscataway, NJ, pages 1–6, **Paper of excellence award**.
- IC33 N. Mathews, A. L. Christensen, R. O'Grady and M. Dorigo (2012), "Spatially Targeted Communication and Self-Assembly in a Heterogeneous Swarm of Robots", Proceedings of IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), IEEE Press, Piscataway, NJ, pages 2551–2552.
- IC32 F. Silva, P. Urbano and A. L. Christensen (2012), "Adaptation of Robot Behaviour through Online Evolution and Neuromodulated Learning", Proceedings of the 13th Ibero-American Conference on Artificial Intelligence (IBERAMIA), Springer, Berlin, Germany, pages 300–309.
- IC31 J. Gomes, P. Urbano and A. L. Christensen (2012), "Progressive Minimal Criteria Novelty Search", Proceedings of the 13th edition of the Ibero-American Conference on Artificial Intelligence (IBERAMIA), Springer, Berlin, Germany, pages 281–290.
- IC30 D. Tarapore, A. L. Christensen, P. U. Lima, and J. Carneiro (2012), "Clonal expansion without self-replicating entities", Proceedings of the 11th International Conference on Artificial Immune Systems (ICARIS), Springer, Berlin, Germany, pages 191–204.
- IC29 J. Gomes, P. Urbano, and A. L. Christensen (2012), "Introducing Novelty Search in Swarm Robotics", Proceedings of the Eight International Conference on Swarm Intelligence (ANTS), Springer, Berlin, Germany, pages 85-96.
- IC28 F. Silva, P. Urbano, S. Oliveira and A. L. Christensen (2012), "odNEAT: An Algorithm for Distributed Online, Onboard Evolution of Robot Behaviours", Proceedings of the Thirteenth International Conference on the Synthesis and Simulation of Living Systems (ALIFE), MIT Press, Boston, MA, pages 251-258. **Tied for best paper award on the collective dynamics track**.
- IC27 J. Gomes, P. Urbano, and A. L. Christensen (2012), "Diverse Behaviors in Swarm Robotics with Novelty Search", Proceedings of the Thirteenth International Conference on the Synthesis and Simulation of Living Systems (ALIFE), MIT Press, Boston, MA, pages 553-554.
- IC26 D. Tarapore, A. L. Christensen, P. Lima, and J. Carneiro (2012), "Environment classification in multiagent systems inspired by the adaptive immune system", Proceedings of the Thirteenth International Conference on the Synthesis and Simulation of Living Systems (ALIFE), MIT Press, Boston, MA, pages 275-282.
- IC25 M. Duarte, S. Oliveira, and A. L. Christensen (2012), "Automatic synthesis of controllers for real robots based on preprogrammed behaviors", Proceedings of the International Conference on Adaptive Behavior (SAB), Springer, Berlin, Germany, pages 249-257.
- IC24 N. Mathews, A. L. Christensen, R. O'Grady, P. Réturnaz, M. Bonani, F. Mondada, M. Dorigo (2011), "Enhanced Directional Self-Assembly based on Active Recruitment and Guidance", Proceedings of the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), IEEE Press, Piscataway, NJ, pages 4762-4769.
- IC23 S. Oliveira, L. Nunes, A. L. Christensen (2011), "An Experiment in Mixing Evolving and Preprogrammed Robots". Proceedings of the European Conference on Artificial Life (ECAL), Springer-Verlag, Berlin, Germany, pages 153–167.
- IC22 H. Silva, S. Oliveria, A. L. Christensen (2011), "Conillon: A Lightweight Distributed Computing Platform for Desktop Grids". Proceedings of the 6th Iberian Conference on Information Systems and Technologies (CISTI 2011), Curran Associates Inc., Red Hook, NY, pages 1–6.
- IC21 N. Mathews, A. L. Christensen, R. O'Grady, and M. Dorigo (2010), "Cooperation in a Heterogeneous Robot Swarm through Spatially Targeted Communication". Proceedings of the 7th International Conference on Ant Colony Optimization and Swarm Intelligence (ANTS), Springer-Verlag, Berlin, Germany, pages 400-407.

- IC20 C. Pinciroli, R. O’Grady, A. L. Christensen, M. Dorigo (2010), ”Controlling Heterogeneous Swarms Through Minimal Communication Between Homogeneous Sub-Swarms”. The Seventh International Conference on Ant Colony Optimization and Swarm Intelligence (ANTS), Springer-Verlag, Berlin, Germany, pages 558-559.
- IC19 N. Mathews, A. L. Christensen, E. Ferrante, R. O’Grady, and M. Dorigo (2010), ”Establishing Spatially Targeted Communication in a Heterogeneous Robot Swarm”, Proceedings of the 9th International Conference on Autonomous Agents and Multiagent Systems (AAMAS), IFAAMAS, pages 939-946. **Nominated for best robotics paper.**
- IC18 R. O’Grady, A. L. Christensen, C. Pinciroli, and M. Dorigo (2010), ”Robots Autonomously Self-Assemble into Dedicated Morphologies to Solve Different Tasks (extended abstract)”, Proceedings of the 9th International Conference on Autonomous Agents and Multiagent Systems (AAMAS), IFAAMAS, pages 1517-1518.
- IC17 J. N. Pereira, A. L. Christensen, P. Silva, and P. Lima. (2010), ”Coordination Through Institutional Roles in Robot Collectives (extended abstract)”, Proceedings of the 9th International Conference on Autonomous Agents and Multiagent Systems (AAMAS), IFAAMAS, pages 1507-1508.
- IC16 R. O’Grady, C. Pinciroli, Roderich Gross, A. L. Christensen, F. Mondada, M. Bonani, and M. Dorigo (2009), ”Swarm-bots to the Rescue”. Proceedings of the 10th European Conference on Artificial Life (ECAL), Springer-Verlag, Berlin, Germany, pages 165–172.
- IC15 C. Pinciroli, R. O’Grady, A. L. Christensen, and M. Dorigo (2009), ”Self-Organised Recruitment in a Heterogeneous Swarm”. Proceedings of the 14th International Conference on Advanced Robotics (ICAR). CD-ROM, paper ID 176, 8 pages.
- IC14 A. L. Christensen, R. O’Grady, and M. Dorigo (2009), ”Parallel Task Execution, Morphology Control and Scalability in a Swarm of Self-Assembling Robots”. Proceedings of 9th Conference on Autonomous Robot Systems and Competitions (ROBOTICA), IPCB-Instituto Politecnico de Castelo Branco, Castelo Branco, Portugal, pages 127-133.
- IC13 R. O’Grady, C. Pinciroli, A. L. Christensen, and M. Dorigo (2009), ”Supervised Group Size Regulation in a Heterogeneous Robotic Swarm”. Proceedings of 9th Conference on Autonomous Robot Systems and Competitions (ROBOTICA), IPCB-Instituto Politecnico de Castelo Branco, Castelo Branco, Portugal, pages 113-119.
- IC12 A. L. Christensen, R. O’Grady, and M. Dorigo (2008), ”Synchronization and Fault Detection in Autonomous Robots”. Proceedings of the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS). IEEE Computer Society, Los Alamitos, CA, pages: 4139-4140.
- IC11 R. O’Grady, A. L. Christensen, and M. Dorigo (2008), ”Autonomous Reconfiguration in a Self-Assembling Multi-Robot System”. Proceedings of International Conference on Ant Colony Optimization and Swarm Intelligence (ANTS). Springer Verlag, Berlin, Germany, pages: 259-266.
- IC10 E. Tuci, C. Ampatzis, V. Trianni, A. L. Christensen, and M. Dorigo (2008), ”Self-Assembly in Physical Autonomous Robots: the Evolutionary Robotics Approach”. Proceedings of the 10th International Conference on Simulation of Adaptive Behavior (SAB). MIT Press, Cambridge, MA, pages 616-623.
- IC9 R. O’Grady, A. L. Christensen and M. Dorigo (2007), ”Self-Assembly and Morphology Control in a Swarm-Bot (VIDEO)”. IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS). IEEE Computer Society, Los Alamitos, CA, pages 2551-2552.
- IC8 R. O’Grady, R. Gross, A. L. Christensen, F. Mondada, M. Bonani, M. Dorigo (2007), ”Performance Benefits of Self-Assembly in a Swarm-Bot”. Proceedings of the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS). IEEE Computer Society, Los Alamitos, CA, pages 2381-2387.
- IC7 A. L. Christensen, R. O’Grady, M. Birattari and M. Dorigo (2007), ”Exogenous Fault Detection in a Collective Robotic Task”. Proceedings of the 9th European Conference on Artificial Life (ECAL). Springer Verlag, Berlin, Germany, pages 555-564.
- IC6 A. L. Christensen, R. O’Grady, and M. Dorigo (2007), ”A Mechanism to Self-Assemble Patterns with Autonomous Robots”. Proceedings of the 9th European Conference on Artificial Life (ECAL). Springer Verlag, Berlin, Germany, pages 716-725.
- IC5 V. Trianni, C. Ampatzis, A. L. Christensen, E. Tuci, M. Dorigo and S. Nolfi (2007), ”From Solitary to Collective Behaviours: Decision Making and Cooperation”. Proceedings of the 9th European Conference on Artificial Life (ECAL). Springer Verlag, Berlin, Germany, pages 575-584.

- IC4 A. L. Christensen, R. O’Grady, M. Birattari and Dorigo, M. (2007), "Automatic Synthesis of Fault Detection Modules for Mobile Robots", Proceedings of NASA/ESA Conference on Adaptive Hardware and Systems (AHS), IEEE Computer Society, Los Alamitos, CA, pages 693-700.
- IC3 A. L. Christensen and M. Dorigo (2006), "Incremental Evolution of Robot Controllers for a Highly Integrated Task", Proceedings of The Ninth International Conference on the Simulation of Adaptive Behavior SAB’06. Springer Verlag, Berlin, Germany, pages 473-484.
- IC2 A. L. Christensen and M. Dorigo (2006), "Evolving an Integrated Phototaxis and Hole-avoidance Behavior for a Swarm-bot", Proceedings of Tenth International Conference on the Simulation and Synthesis of Living Systems (ALIFEX). MIT Press, Cambridge, MA, pages 248-254.
- IC1 A. L. Christensen, J. Brito and J. G. Silva (2004), "The Architecture and Performance of WMPI II", Proceedings of 11th European PVM/MPI Users’ Group Meeting - Recent Advances in Parallel Virtual Machine and Message Passing Interface. Springer Verlag, Berlin, Germany, pages 112-121.

- Peer-reviewed National Conference Publications

- NC7 F. Silva, L. Correia, and A. L. Christensen (2015), "A Case Study on the Scalability of Online Evolution of Robotic Controllers". Proceedings of the Portuguese Conference on Artificial Intelligence (EPIA), pages 189–200.
- NC6 F. Velez, A. Nadziejko, A. L. Christensen, S. Oliveira, T. Rodrigues, V. Costa, M. Duarte, F. Silva, and J. Gomes (2015), "Experimental Characterization of WSNs Applied to Swarms of Aquatic Surface Drones", Proceedings of the 10th Conference on Telecommunications (CONFTELE), Instituto de Telecomunicações, Aveiro, Portugal, *in press*.
- NC5 A. L. Christensen, S. Oliveira, O. Postolache, M. J. de Oliveira, S. Sargento, P. Santana, L. Nunes, F. Velez, P. Sebastião, V. Costa, M. Duarte, J. Gomes, T. Rodrigues, and F. Silva (2014), "Communication and Control for Swarms of Aquatic Surface Drones: the HANCAD and CORATAM projects ". Proceedings of the 8° Congresso do Comité Português da URSI, ANACOM, Lisbon, Portugal.
- NC4 F. Silva, L. Correia, and A. L. Christensen (2013), "Dynamics of Neuronal Models in Online Neuroevolution of Robotic Controllers". Proceedings of the 16th Portuguese Conference on Artificial Intelligence (EPIA), LNAI 8154, Springer-Verlag, Berlin, Germany. pages 90–101. **Nominated for Best Paper Award**
- NC3 C. Duque, M. Duarte, M. Ribeiro, S. Oliveira, A. L. Christensen and N. Souto (2013), "Real-time Control of a Mobile Robot Using Electrooculography". Proceedings of the 9th Conference on Telecommunications (CONFTELE), Instituto de Telecomunicações, Coimbra, Portugal, pages 137–140.
- NC2 P. Szczawiński, M. Duarte, S. Oliveira and A. L. Christensen (2013), "Toward Evolved Vision-based Control for a Quadrocopter". Proceedings of the 9th Conference on Telecommunications (CONFTELE), Instituto de Telecomunicações, Coimbra, Portugal, pages 153-156.
- NC1 M. Duarte, A. L. Christensen, S. Oliveira (2011), "Towards Artificial Evolution of Complex Behavior Observed in Insect Colonies". Proceedings of the Portuguese Conference on Artificial Intelligence (EPIA), Lecture Notes in Artificial Intelligence. Springer-Verlag, Berlin, Germany, pages 153–167.

- Peer-reviewed International Workshop Publications

- WSP12 F. Velez, A. Nadziejko, A. L. Christensen, S. Oliveira, T. Rodrigues, V. Costa, M. Duarte, F. Silva, and J. Gomes (2015), "Short Paper: Wireless Sensor and Networking Technologies for Swarms of Aquatic Surface Drones", IEEE 82nd Vehicular Technology Conference, *in press*.
- WSP11 J. Gomes, P. Mariano, and A. L. Christensen (2015), "Hyb-CCEA: Cooperative Coevolution of Hybrid Teams". Proceedings of the Companion Publication of the 2015 on Genetic and Evolutionary Computation Conference (Workshop on Evolution of Collective Behavior at GECCO 2015), ACM Press, New York, NY, pages 1251–1252.
- WSP10 J. Gomes, P. Mariano, and A. L. Christensen (2014), "Diversity-based Coevolution of Behaviourally Heterogeneous Multirobot Systems". Proceedings of the Workshop on Nature-inspired Techniques at PPSN 2014, **FoCAS best student presentation award**.
- WSP9 F. Silva, L. Correia, and A. L. Christensen (2014), "Towards Evolving Controllers for Physical Multirobot Systems with odNEAT". Proceedings of the Workshop on Evolution of Physical Systems at ALIFE 2014..

- WSP8 J. P. R. Alves, S. Oliveira and A. L. Christensen (2013), "NXTTour: an Open Source Robotic System Operated over the Internet", Proceedings of the Workshop on Open Source and Design of Communication, ACM Press, New York, NY, pages 18–23.
- WSP7 R. O’Grady, A. L. Christensen, R. Gross, and M. Dorigo (2012), "Self-organised Computational Structures for Real Time Analysis in Highly Distributed Environmental Monitoring", Proceedings of the IROS 2012 Workshop on Robotics for Environmental Monitoring.
- WSP6 M. Duarte, S. Oliveira, and A. L. Christensen (2012), "Structured Composition of Evolved Robotic Controllers", Proceedings of the 5th International Workshop on Evolutionary and Reinforcement Learning for Autonomous Robot Systems (ERLARS), N. Siebel, Berlin, Germany, pages 19–25, ISSN 2190-5576 (print), ISSN 2190-5746 (online)
- WSP5 F. Silva, P. Urbano and A. L. Christensen (2012), "Continuous Adaptation of Robot Behaviour through Online Evolution and Neuromodulated Learning", Proceedings of the 5th International Workshop on Evolutionary and Reinforcement Learning for Autonomous Robot Systems (ERLARS), N. Siebel, Berlin, Germany, pages 9–18, ISSN 2190-5576 (print), ISSN 2190-5746 (online)
- WSP4 H. Silva, A. L. Christensen, S. Oliveria (2011), "Performance study of Conillon - a platform for distributed computing". Workshop Open Source and Design of Communication (OSDOC), ACM Press, New York, NY, pages 13–18.
- WSP3 H. Silva, , A. L. Christensen, S. Oliveira (2010). "Building and designing a distributed computing platform" In Proceedings of the Workshop on Open Source and Design of Communication (OSDOC), ACM Press, New York, NY, pages 55–58.
- WSP2 A. L. Christensen, R. O’Grady, and M. Dorigo (2008), "Towards Adaptive Morphogenesis in Self-Assembling Robots". Extended abstract accepted for The Workshop on Self-Reconfigurable Robots/Systems and Applications, held as part of IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS).
- WSP1 R. O’Grady, A. L. Christensen, and M. Dorigo (2007), "SWARMORPH: Morphology Control with a Swarm of Self-Assembling Robots". Extended abstract accepted for The Workshop on Self-Reconfigurable Robots/Systems and Applications, held as part of IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS).

- Theses and Technical Reports

- TR5 N. Mathews, A. L. Christensen, R. O’Grady, and M. Dorigo (2015), "Virtual Nervous Systems for Self-Assembling Robots – A preliminary report", arXiv, cs.RO/1505.07050, <http://arxiv.org/abs/1505.07050>
- TR4 A. L. Christensen (2008), "Fault Detection in Autonomous Robots", Ph.D. dissertation, IRIDIA-CoDE, Universite Libre de Bruxelles, Brussels, Belgium.
- TR3 A. L. Christensen (2005), "Efficient Neuro-Evolution of Hole-avoidance and Phototaxis for a Swarm-bot", Diplôme d’Études Approfondies en Sciences Appliquées thesis (DE/MSc. thesis), IRIDIA TR/IRIDIA/2005-014.
- TR2 A. L. Christensen and J. I. Rasmussen (2002), "A New Approach to Multi Point Linkage Analysis", Cand.scient.dat/Master thesis, Aalborg University/deCode Genetics.
- TR1 A. Ingólfssdóttir, A. L. Christensen, J. A. Hansen, J. Johnsen, J. Knudsen, and J. I. Rasmussen (2002), "A Formalization of Linkage Analysis", Basic Research in Computer Science (BRICS), Technical Report, RS-02-7.

## Invited Talks

- IT12 Title: "Towards Swarm Robotics Systems for Real-world Applications", seminar, The University of York, UK, June 23, 2016
- IT11 Title: "Large-scale Multirobot Systems for Real-world Applications: Recent Developments and Future Challenges", seminar, ISR/IST, June 16, 2016

- IT10 Title: "Ocean Swarm, Collective Autonomous Surface Drones", 7-minute investor pitch, COHiTEC final presentation at Pavilhão do Conhecimento, Lisbon, Portugal, July 16, 2015
- IT9 Title: "From Ant and Darwin to Innovation", invited talk, Semana da Investigação, ISCTE-IUL, June 16, 2015
- IT8 Title: "Communication and Control for Swarms of Aquatic Surface Drones: the HANCAD and CORATAM projects", invited talk, ANACOM - 8º Congresso do Comité Português da URSI on "Drones e veículos autónomos: desafios do presente e do futuro", November 8, 2014.
- IT7 Title: "Swarm Robotics and Self-organization", invited talk, Semana da Investigação, ISCTE-IUL, June 27, 2014
- IT6 Title: "Experiments in Swarm Robotics", keynote, European Conference on Complex Systems Doctoral Symposium, September 15, 2010
- IT5 Title: "Swarm Robotics – Engineering Emergence", invited talk, The notions of emergence in physical and social sciences workshop, Arrábida, Portugal, June 9, 2009
- IT3 Title: "Self-Assembly, Morphology Control and Firefly-Inspired Fault Detection in a Swarm of Autonomous Robots", seminar, ISR/IST, May 18, 2009
- IT2 Title: "Self-Assembly, Morphology Control and Firefly-Inspired Fault Detection in a Swarm of Autonomous Robots", seminar, LabMag/FCUL, May 15, 2009
- IT1 Title: "Fault Detection and Self-Assembly in Swarms of Robots", seminar, ISR/IST, June 12, 2008

## Press Coverage

- AAAI Video Highlights: Drones Navigating Forests and Robot Boat Swarms** Feb. 11, 2016

*IEEE Spectrum* *International*

– <http://spectrum.ieee.org/automaton/robotics/artificial-intelligence/aaai-video-highlights-drones-navigating-forests-and-robot-boat-swarms>
- Drones of the sea learn to swarm** Feb. 5, 2016

*ZDNet* *International*

– <http://www.zdnet.com/article/drones-of-the-sea-learn-to-swarm-video>
- Will SWARMS of smart surveillance ships soon spy from the sea?** Feb. 3, 2016

*Daily Mail* *UK*

– <http://www.dailymail.co.uk/sciencetech/article-3430481/>
- Swarming robot boats demonstrate self-learning** Feb. 2, 2016

*Gizmag* *International*

– <http://www.gizmag.com/swarm-nautical-robots/41607/>
- Sucesso.pt** Sept. 19, 2015

*SIC Notícias* *Portugal*

- Business feature on Ocean Swarm, including interviews and footage of aquatic drones
- **Sucesso.pt** Sept. 19, 2015  
*SIC Notícias* *Portugal*
  - Business feature on Ocean Swarm, including interviews and footage of aquatic drones
- **Exame Informática TV** Sept. 12, 2015  
*SIC Notícias* *Portugal*
  - Technology feature on Ocean Swarm, including interviews and footage of aquatic drones
- **Exame Informática** In press  
*Grupo Impresa* *Portugal*
  - Technology feature on Ocean Swarm
- **Animats, 52-minute documentary** In production  
*Audrey Mikaëlian, AB Productions* *International*
  - Footage of self-assembling robots
- **Inovações que detetam o HIV em três dias e drones que procuram peixe sozinhos** July 14, 2015  
*Observador, online* *Portugal*
  - <http://observador.pt/2015/07/14/inovacoes-que-detetam-o-hiv-em-tres-dias-e-drones-que-procuram-peixe-sozinhos-em-portugues/>
- **Investigadores desenvolvem drone para realizar tarefas no Mar** June 22, 2015  
*Açoreano Oriental* *Regional*
  - Full page article on aquatic drones built at BioMachines Lab.
- **Wild but True** Episode not aired yet  
*Discovery Kids* *Australia*
  - Footage of self-assembling robots
- **Schödingers Katt: Kunstig Intelligens** April 16, 2015  
*National Norwegian TV, NRK TV* *Norway*
  - Footage of self-assembling robots
- **Watch A Swarm Of Robots Team Up With Flying Drones To Solve Real-World Problems** October 24, 2012  
*TechCrunch* *International*
  - Article and video on heterogeneous robot swarms.
  - <http://techcrunch.com/2012/10/24/watch-a-swarm-of-robots-team-up-with-flying-drones-to-solve-real-world-problems/>
- **Swarm robots cooperate with augmented-reality drone** October 24, 2012  
*KurzweilAI* *International*
  - Article and video on heterogeneous robot swarms.
  - <http://www.kurzweilai.net/swarm-robots-cooperate-with-ar-drone>
- **AR Drone Helps Swarm of Self-Assembling Robots to Overcome Obstacles** October 23, 2012  
*IEEE Spectrum Online* *International*
  - Article and video on heterogeneous robot swarms.



- <http://spectrum.ieee.org/automaton/robotics/artificial-intelligence/iros-2012-ar-drone-helps-swarm-of-selfassembling-robots-to-overcome-obstacles>

**Swarmanoid Robot Teams Up with Itself to Steal Your**

August 15, 2011

• **Books**

*IEEE Spectrum Online*

*International*

- Article and video on heterogeneous robot swarms.
- <http://spectrum.ieee.org/automaton/robotics/artificial-intelligence/swarmanoid-robot-teams-up-with-itself-to-steal-your-books>

• **Viden Om: Insekter i Flok**

September 23, 2008

*National Danish TV, DR2*

*Denmark*

- Footage of self-assembling robots

## Languages

- Danish/Scandinavian (native)
- English (expert)
- Portuguese (intermediate, B1)
- German (fair)
- French (basic)