

# CV of Thomas Bolander

Thomas Bolander

January, 2019

## Personal data

Name and title Thomas Bolander, Associate Professor, Ph.D., M.Sc. (cand.polyt.)  
Personal data *Born:* 20 October, 1972. *Nationality:* Danish.  
*Family status:* Married, two children born in 2003 and 2010.  
Address Bernhard Bangs Allé 20 st.th; DK-2000 Frederiksberg; Denmark.  
E-mail tobo@dtu.dk  
WWW <http://www.compute.dtu.dk/~tobo>

## Scientific focus areas

Artificial intelligence (AI), social intelligence, logic, multi-agent systems, automated planning.

## Awards

- *Teacher of the year* at DTU, 2006. Nominated for the award also in 2007, 2008, 2010 and 2018.
- *Teacher of the year* at Department of Informatics and Mathematical Modelling (IMM), 2008.
- 3rd place, *best research communication of 2018* at Forskerzonen, for article on own research on social robotics: <https://bit.ly/2HaLDYE>

# 1 Educational background, employments and appointments

## Employments and educational background

December 2007–present: Associate Professor at Department of Applied Mathematics and Computer Science (DTU Compute), Technical University of Denmark (DTU).

January 2016–present: External lecturer in artificial intelligence at *DIS—Study Abroad in Scandinavia* (part-time).

September 2011–2015: Educational Developer at LearningLab DTU (part-time).

December 2004–November 2007: Assistant Professor at DTU Informatics.

February, 2004: Ph.D. degree from Informatics and Mathematical Modelling, DTU.

Spring 2001 & Spring 2003: Amanuensis on leave from my PhD to teach two courses (see Teaching section below).

October, 1999: M.Sc. degree (cand.polyt.) from Dep. of Mathematics, DTU.

1997-1999: Exchange student at Department of Mathematics, University of Oslo, Norway.

1998-1999: Teaching assistant at Department of Informatics, University of Oslo.

1994-1997: Teaching assistant at Department of Mathematics, DTU.

### **Membership of commissions, think tanks and expert panels**

2016–present: Member of the *SIRI Commission (SIRI-kommissionen)*, investigating how Denmark can utilise the growth within AI and digitalisation. Chaired by Thomas Damkjær Pedersen. <https://ida.dk/om-ida/temaer/siri-kommissionen>

2018–present: Member of the *Digital Think Tank of Leaders (Ledernes Digitale Tænk tank)* with the aim of preparing leaders to master digitalisation and technological change. Chaired by Erik Korsvik Østergaard. <https://bit.ly/2FnZo4s>

2019–present: Member of the *TechDK* commission, Djøf, formulating strategies for how to regulate technologies in order to create a society in balance. Chaired by Stine Bosse. <https://bit.ly/2VNDUD4>

2017–present: Member of the expert panel of the *Danish Society of Engineers (IDA)*.

### **Memberships of boards and committees**

2018–present: Member of the board of *Matematikcenter*, offering free online teaching material and free math tutoring for primary and high school students. <https://www.matematikcenter.dk>

2005–present: Book reviews editor and member of the editorial board of the Springer journal *Studia Logica*. Book reviews: <http://slreviews.compute.dtu.dk>, journal: <https://link.springer.com/journal/11225>

2018–present: Member of the Executive Committee and Danish National Representative of the *Scandinavian Logic Society*. <http://scandinavianlogic.org>

2010-2012: Member of the steering committee of the conference series *Advances in Modal Logic* (AiML). <http://www.aiml.net>

2018–present: Member of the advisory board of the company *JumpStory*.

2004-2009: Member of the board of the *Society of Issues in Technical Education (Selskabet for Tekniske Uddannelsesspørgsmål)*, a society under the Danish Society of Engineers (IDA) concerned with the quality of teaching and recruitment of students to the engineering educations in Denmark.

### **Other appointments**

2014–present: Scientific advisor and co-organiser of *Science & Cocktails*. <http://www.scienceandcocktails.org>

2018–present: Ambassador for *ForskerZonen*, part of videnskab.dk, online media for research communication to the general public. <https://videnskab.dk/forskerzonen>

2006–present: Head of the *iMARS Lab* (intelligent Multi-Agent Robotic Systems Lab) at DTU Compute. Teaching and research-related projects within AI for robotics (in particular multi-robotic systems and human-robot interaction).

2009-2013: Director of studies of the study line “The world in a natural science perspective” (“Verden i et naturvidenskabeligt perspektiv”) at the *Copenhagen University Extension (Folkeuniversitetet i København)*.

## 2 Research

### Research projects

- Smart Innovation with Shade*, 2017. Role: Principal investigator. In collaboration with the company Shade. Funded by the EU, Region Hovedstaden & Vækstforum.
- The Primacy of Tense*, 2016-2019. Role: Scientific participant. Principal investigator: Peter Øhstrøm, Aalborg University. Funded by the Danish Council for Independent Research. <http://www.prior.aau.dk>
- Center for Information and Bubble Studies*, 2015-2020. Role: Core group member. Principal investigator: Vincent Hendricks, Copenhagen University. Funded by the Carlsberg Foundation. <http://bubblestudies.ku.dk>
- DigiPlay*, 2014. *Adaptive Language Acquisition Module for Children with Cognitive Disabilities*. Role: Principal investigator. Funded by OPALL (Public-Private Alliances).
- HYLOCORE (Hybrid Logic, Computation, and Reasoning Methods)*, 2009-2013. Role: Co-applicant. Principal investigator: Torben Braüner, Roskilde University. Funded by the Danish Natural Science Research Council. <http://hylocore.ruc.dk>
- HyLoMOL (Hybrid Logic Meets Other Logics)*, 2005-2008. Role: Co-applicant. Principal investigator: Torben Braüner, Roskilde University. Funded by the Danish Natural Science Research Council. <http://hylomol.ruc.dk>

### Conference organisation

I have (co-)organised and (co-)chaired a total of 11 international conferences and workshops, 5 of them within the last 4 years.

- Current Trends in Artificial Intelligence II*, Copenhagen, 2017. Role: Main organiser and program co-chair. <http://www2.compute.dtu.dk/~tobo/trends-in-ai2/>
- Epistemic Planning*, Schloss Dagstuhl, Germany, 2017. Role: Co-organiser and program co-chair. <https://www.dagstuhl.de/en/program/calendar/semhp/?semnr=17231>
- Current Trends in Artificial Intelligence I*, Copenhagen, 2016. Role: Main organiser and program co-chair. <http://www2.compute.dtu.dk/~tobo/trends-in-ai1/>
- The CADILLAC workshop*, Copenhagen, 2016. Role: Co-organiser and co-chair. <http://cadillac.compute.dtu.dk>
- To be announced! Synthesis of epistemic protocols*, Lorentz Centre, The Netherlands, 2015. Role: Co-organiser and program co-chair. <http://www.lorentzcenter.nl/lc/web/2015/696/info.php3?wsid=696&venue=Oort>
- Advances in Modal Logic*, Copenhagen, 2012. Role: Co-organiser. <http://hylocore.ruc.dk/aiml2012/committees.php>
- Internation CDIO Conference*, Copenhagen, 2011. Role: Co-organiser.
- International Workshop on Hybrid Logic and Applications (HyLo)*, Edinburgh, 2010. Role: Co-organiser and program co-chair. Workshop affiliated with European Summer School in Logic, Language and Information (ESSLLI). <http://hylocore.ruc.dk/HyLo2010.html>
- Methods 4 Modalities*, Copenhagen, 2009. Role: Co-organiser and program co-chair. <http://m4m.loria.fr/M4M6/>
- Hybrid Logic (HyLo)*, Seattle, USA, 2006. Role: Co-organiser and program co-chair. Workshop affiliated with Logic in Computer Science (LICS) 2016. <http://hylomol.ruc.dk/HyLo2006/>
- Conference on Self-Reference*, Copenhagen, 2002. Role: Co-organiser and program chair.

## Program committee memberships

I have served on the program committee of 42 internationally acclaimed conferences, 23 of them within the last 4 years. The programme committee memberships include the top general AI conferences AAAI and IJCAI, the top conference in multiagent systems, AAMAS, and the top conference in knowledge representation, KR.

*AAAI Conference on Artificial Intelligence* 2019, 2018.

*IJCAI: International Joint Conference on Artificial Intelligence* 2018, 2017, 2016.

*AAMAS: International Conference on Autonomous Agents and Multiagent Systems* 2019, 2018, 2016.

*KR: International Conference on Principles of Knowledge Representation and Reasoning* 2018, 2016.

*AiML: Advances in Modal Logic* 2016, 2012.

*M4M: Methods 4 Modalities* 2013, 2011, 2009.

*FRoCoS: Frontiers of Combining Systems* 2017, 2015, 2013.

*LORI: International Conference on Logic, Rationality and Interaction* 2019, 2017, 2015.

*GCAI: Global Conference on Artificial Intelligence* 2018.

*EUMAS: European Conference on Multi-Agent Systems* 2018.

*DALI: Dynamic Logic: new trends and applications* 2019. Workshop affiliated with Formal Methods (FM) 2019.

*ECSI: European Conference on Social Intelligence* 2014.

*LAMAS: Workshop on Logical Aspects of Multi-Agent Systems* 2016, 2015, 2014, 2012, 2011.

*SCAI: Scandinavian Conference on Artificial Intelligence* 2015, 2013, 2006.

*RAIA: Responsible Artificial Intelligence Agents* 2019. Workshop affiliated with AAMAS 2019.

*CDIO: International CDIO Conference* 2012, 2011.

*HyLo: Hybrid Logic* 2010, 2009, 2007, 2006.

*IADIS International Conference on Intelligent Systems and Agents* 2008, 2007.

## Invited research talks at international conferences and workshops

In total 17 invited talks at international conferences and workshops, 10 of them within the last 4 years.

*PFAI: Artificial Intelligence Platform*, Toulouse, France, 2019.

*The Actor-Reality Construction*, Pisa, Italy, 2018.

*MAFTEC Workshop*, Rennes, France, 2018.

*Reasoning in Social Context*, Amsterdam, The Netherlands, 2018 and 2015.

*M4M: Methods for Modalities*, Kanpur, India, 2017. Invited tutorial on epistemic planning.

*LogiCIC Workshop*, Amsterdam, The Netherlands, 2016.

*Jaakko Hintikka Memorial Conference*, Helsinki, Finland, 2016.

*Games and Cognition*, Amsterdam, The Netherlands, 2015.

*Hybrid Reasoning for Intelligent Systems*, Dortmund, Germany, 2015.

*Workshop on Correlated Information Change*, Amsterdam, The Netherlands, 2014.

*Modality and Modalities*, Lund, Sweden, 2014 and Roskilde, Denmark, 2013.

*Planning with Epistemic Goals*, Schloss Dagstuhl, Germany, 2014. Invited tutorial on epistemic planning.

*Epistemic Logics in Artificial Intelligence*, Peking, China, 2013.

*Social Dynamics of Information Change*, Amsterdam, The Netherlands 2013.

*Dynamics in Logic II*, Lille, France, 2012.

### **Invited research talks at universities**

In addition to the 17 invited talks at conferences and workshops, I have given 20 international invited research talks at universities in France, Germany, China, The Netherlands, UK, Norway and Italy. Furthermore, a number of invited research talks at other Danish universities: Roskilde University, Copenhagen University, Aarhus University. Details: <http://www2.compute.dtu.dk/~tobo/#talks>

### **Longer research stays (1 month or more)**

I have been on 5 longer research visits (1 month or more), the latest 4 of them were invited stays funded by the host.

2019: University of Toulouse 1, France (visiting professor, current).

2017: Center for the Study of Language and Cognition, Zhejiang University, China.

2014: IRIT - Toulouse Institute of Computer Science Research, France.

2010: KRDB Research Centre for Knowledge and Data, Bolzano, Italy.

2002: Arche Research Centre and the School of Computer Science, University of St. Andrews, Scotland.

### **PhD supervision and PhD assessment committees**

I have co-supervised 6 PhD students since 2010, half of them as principal or single supervisor. Of these, 2 are current. In addition I have been on the assessment committee of 4 PhD theses, 2 in France and 2 in Denmark.

### **Scientific publications**

My scientific publications are listed in a separate document.

## **3 Teaching**

### **Course teaching**

I have taught 18 different courses at all levels in mathematics, computer science and AI, 12 of them developed from scratch, and all receiving consistently very high evaluations.

2009-present: *02285 Artificial Intelligence and Multi-Agent Systems*. Advanced master course with 100+ students. The course involves a large programming project with a final competition, where the students compete to build the most efficient multi-agent software system simulating logistic hospital robots. Invented and developed from scratch by me. Taught 7 times in 2019, 2018, 2017, 2016, 2015, 2010, 2009.

2018-present: *02180 Introduction to Artificial Intelligence*. Master course with 200+ students. Taught in 2019, 2018.

- 2016-present: *Artificial Intelligence* at DIS Copenhagen. Bachelor course with 25 students. Taught 6 times (spring and autumn).
- 2010-present: *01017 Discrete Mathematics*. Introductory bachelor course with 300+ students. Teaching half of the course, developed from scratch by me. Taught 9 times: every autumn since 2010.
- 2018-present: *Artificial Intelligence*, a two day elective course at DTU's Executive MBA. Taught spring 2018.
- 2011-present: *Education in University Teaching at DTU (UDTU)*.] The mandatory education in university teaching for assistant professors at DTU, offered by LearningLab DTU. In the period 2011-2015, I co-developed and co-taught this course with Pernille Andersson, LearningLab DTU. Taught in total 9 times (twice a year). Since 2016, I am still responsible for teaching half a day of the course (the course is 6 full days split into two modules). This half day has been taught additionally 6 times.
- 2005-2014: *01017/01917 Discrete Mathematics and Databases*. Two introductory bachelor courses for respectively the BSc Eng and BEng students at DTU. Teaching half of the courses (the database part), developed from scratch by me. Taught 17 times.
- 2009-2011: *Mathematics: The Science of the Infinite I & II* at the Public University Extension of Copenhagen University. Course on the history, philosophy and foundation of mathematics. Co-developed by me from scratch. Taught 3 times.
- 2010: *CDIO Project*. CDIO-based project course of the BSC Eng education at DTU. Students were building a multi-agent system using Lego NXT robots. The course was invented and developed from scratch by Paul Fischer, DTU, and me.
- 2008-2009: *02101/02102 Introductory Programming*. Introductory bachelor course. Developed by me from scratch. Taught 3 times.
- 2003-2008: *02105/02110 Algorithms and Datastructures I & II*. Two courses in algorithms, taught 6 times.
- 2005: *02107 Analysis Model Program (Computational Geometry)*. Course developed from scratch by Paul Fischer, DTU, and me. Taught once.
- 2001: *49256 Compiler Techniques*.
- 2000: *49409 Automata, Formal Languages and Computability*.

### Thesis supervision

I have supervised 64 master theses since 2005, 30 of them within the last 5 years. I have supervised 38 bachelor theses in the same period.

### Public outreach

In total 99 invited talks for non-specialists, 12 public debates, and 142 media appearances (radio, TV, newspapers, magazines, online media). More than 3/4 of these are within the last 4 years (78 invited talks, 12 public debates and 107 media appearances) and half of them even within only the last 2 years only (62 invited talks, 10 public debates and 70 media appearances). Full list of my talks: <http://www2.compute.dtu.dk/~tobo/#populartalks>; full list of my media appearances: <http://www2.compute.dtu.dk/~tobo/#media>.

**Invited talks at ministries and government agencies.** In total 10 talks, including Digitalt Topmøde, The Danish Government, 14/3-2019; Finanstilsynet, 11/1-2018, 10/10-2017; Royal Danish Defence College (Forsvarsakademiet), 10/10-2017; Ministry of Education

(Undervisningsministeriet), 1/6-2017; Capital Region of Copenhagen (Region Hovedstaden), 26/4-2017; Ministry of Culture (Kulturministeriet), 25/4-2017; Ministry of Higher Education and Science (Uddannelse- og Forskningsministeriet), 20/4-2017; Ministry of Health (Sundheds- og Ældreministeriet), 25/11-2016.

**Invited talks at public university extensions, student associations, high schools and libraries.** In total 24 talks, including Gentænk (all high schools of Gentofte Kommune), 27/8-2018; the public university extensions in Aarhus, Aalborg and Copenhagen, 10 talks; Ungdommens Naturvidenskabelige Forening (UNF) in Aalborg and Copenhagen, 5 talks.

**Invited talks at organisations, associations, societies, think tanks.** In total 23 talks, including Nordic Council (Nordisk Ministerråd), Lithuania, 5/4-2019; HK Midt, 20/11-2018; IDA Innovate, 28/9-2018; Finansforbundet, 16/8-2018; The Academy of Technical Sciences (Akademiet for de Tekniske Videnskaber, ATV), 4/5-2018; Copenhagen Institute for Future Studies (Institut for Fremtidforskning), 14/9-2017; Selskabet for Naturlærens Udbredelse (SNU), 11/9-2017, 20/9-2017; Disruptionrådet, 19/6-2017; The Think Tank DEA (Tænketanken DEA), 4/4-2017; Ledernes Hovedorganisation, 28/3-2017; Selskabet for Filosofi og Psykologi, 23/5-2012.

**Invited non-specialist talks at universities.** In total 9 talks, including High Tech Summit DTU, 11/10-2018; Copenhagen Business School, 8/2-2018; Dep. of Science Education, Copenhagen University, 24/1-2018; Zhejiang University, China, 14/12-2018, 11/12-2018; Dep. of Media, Cognition and Communication, Copenhagen University, 24/8-2017, 18/11-2016.

**Invited talks at private companies.** In total 8 talks, including Keylane, 28/9-2018; Ogilvy, 16/12-2016; Carnegie Asset Management, 15/9-2016, 14/9-2016.

**Keynote talks at conferences (not including technical research talks at scientific conferences).** In total 5 talk at Executive Forum 2019, Zurich, Switzerland, 24/3-2019; Maskinmestrenes Erhvervskonference (Ajour), 29/11-2018; Integrating Tourism and Business (ITAB), 31/10-2018; cl{AI}ms Forum 2, Sydney, Australia, 1/5-2018; Internetdagen, Dansk Internet Forum, 12/9-2017.

**Other invited talks.** In total 20 talks, including official opening of ForskerZonen, 26/9-2018; Væksthus Syddanmark, 8/6-2018; Science Slam, Folkemødet på Bornholm, 16/6-2017; Open Air Academy, Brede, 25/5-2016; Hjerneboksen, Teatret ved Sorte Hest, 20/2-2014; Science and Cocktails, 8/10-2013, 1/11-2011.

**Invited public debates.** In total 12 debates, including Internetdagen, 1/10-2018, Techfestival Copenhagen, 7/9-2018, 5/9-2018; BLOOM Science Festival, 27/5-2018, 26/5-2017; Folkemødet på Bornholm, 6 times 2016-2018.

**National TV appearances.** In total 18 times on TV2 and DR2, including *Deadline*, DR2 (1/11-2018, 2/4-2016, 12/3-2015, 10/2-2012); *So ein Ding*, DR2 (3/11-2018); *TV2 Nyhederne* (18/8-2018, 9/4-2018, 6/4-2017, 5/7-2016); *Go' Morgen Danmark*, TV2 (28/4-2017); *Danskernes Akademi*, DR2 (4-2011).

**National radio appearances.** In total 42 times on Radio 24syv, Radio Nova, DR P1 and DR P3. Including *24 spørgsmål til professoren*, Radio 24syv (29/7-2018); *Mikrofonholder*, Radio 24syv (15/6-2017); *Hjernebassen*, DR P1 (18/9-2018, 25/4-2016, 15/4-2013); *Rosenkjær-eksperimenterne*, DR P1 (1/11-2017); *Elektronista*, Radio 24syv (21/9-2016, 30/3-2016); *Kulturen på P1*, DR P1 (8/10-2018, 28/2-2018); *Orientering*, DR P1 (18/4-2018, 11/3-2014); *Ghandi*, DR P3 (9/9-2014).

**Newspaper appearances.** In total 30 times in *Aftenposten*, *Berlingske*, *BT*, *Børsen*, *Ekstrabladet*, *Information*, *Jyllands-Posten*, *Kristelig Dagblad*, *Metro Express*, *Politiken*, *Weekendavisen*.

**Magazine appearances.** In total 20 times, including *Lundbeckfonden Magasinet*, 06-2018; *Kvant*, 06-2018; *Metalmagasinet*, 05-2018; *Magasinet Arbejds miljø*, 04-2018; *Vejlederforum*, 2017; *Ingeniøren*, 9 times; *Computerworld*, 02-2016.

**Online media appearances.** In total 34 times, including *ForskerZonen*, twice 2018; *videnskab.dk*, 11 times; *sciencereport.dk*, 21/5-2018; *dr.dk*, 9 times; *Magtens Tredeling*, *K-News*, 22/11-2018; *Machine Intelligence Research Institute (MIRI)*, Berkeley, USA, 13/4-2014.

**Videos on YouTube.** Some of my popular science appearances are accessible on YouTube and have been watched in total 12k times.

- *Danskernes Akademi* video lecture for DR2 (2011). 5.2k views. <https://youtu.be/-rQF7INhFvo>
- *Science & Cocktails* talk (2013). 3.2k views. <https://youtu.be/WHEy0BWkPW0>
- *Selskabet for Naturlærens Udbredelse* talk (2017). 1.1k views. <https://youtu.be/AdfanNqln7A>
- *Forskningens Døgn*, *Matematikken i kunstig intelligens* (2018). 925 views. [https://youtu.be/k3WWmZw\\_z1o](https://youtu.be/k3WWmZw_z1o)
- *4 minute introduction to AI* for the SIRI Commission (2016). 919 views. [https://youtu.be/3kFWw\\_jmSjk](https://youtu.be/3kFWw_jmSjk)
- *DTU Alumni* talk (2017). 653 views. <https://youtu.be/dum9ypnelnU>