Maria M. Hedblom

COGNITIVE SCIENTIST AND THEORETICAL COMPUTER SCIENTIST

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Experience_

Tenured Assistant Professor in Artificial Intelligence	8/2021 –
Jönköping University, Jönköping Artificial Intelligence Laboratory	Jönköping, Sweden
 Working on several research projects, including industry collaborations. Teaching and developing courses for the M.Sc in AI Engineering (was nominated for Best Teacher in 2022). Organised several international conferences. At writing time, 13 (co-)authored publications and 3 edited conference proceedings were published during this position. 	
Postdoctoral Researcher in Cognitive Robotics	2/2021 – 7/2021
University of Bremen, Institute for Artificial Intelligence	Bremen, Germany
 Working in the EASE project on cognitive robotics for everyday activities. Working in the MUHAI project on formal semantics for human-centred AI. Co-authored grant applications. Organised scientific conferences. 	
Founding Member of an Al-Tech Start-up	10/2018 – 01/2020
Novelty Factory KG: Photogeniq	Vienna, Austria
 AI start-up project on computational creativity, working on taking generative ML into the creative industries. Tasks included: Successfully acquiring grant funding, performing market and user analyses, designing business models, pr for GAN algorithms and general product development. 	eparing training data
Postdoctoral Researcher in Theoretical Computer Science	1/2018 – 1/2019
Free University of Bozen-Bolzano, The KRDB Research Centre for Knowledge and Data	Bozen-Bolzano, Italy
 Working on ontology-driven conceptual modelling. Performed usability tests on ontology algorithms to improve information retrieval and investigated the most appropriate for of events. Co-authored grant applications (funds accumulating to approx. 100 000 € was acquired.) Organised several scientific conferences, gathering hundreds of people. Co-edited conference proceedings. 	rmal representation
Researcher and University Lecturer	8/2012 – 6/2017
 FREE UNIVERSITY OF BOZEN-BOLZANO; OTTO-VON-GUERICKE UNIVERSITY MAGDEBURG; UNIVERSITY OF LINKÖPING Taught bachelor and master level courses in computer science, cognitive science and scientific writing. Supervision of students, some resulting in publications. 	Europe
Education	

PhD. in Cognitively-Inspired AI

Otto-von-Guericke University Magdeburg, Institute of Knowledge and Language Engineering

- An interdisciplinary research agenda focused on spatiotemporal relationships and their role in human conceptualisations, natural language and metaphors with the purpose to see how it can be used to advance the state of AI.
- Graduated with Magna Cum Laude (with great honours), equal to a 1.0.
- Authored over 20 peer-reviewed publications with colleagues from several institutions.
- Co-authored research proposals and project reports.
- Presented research at over 20 conferences and spoke as an invited speaker at several research institutes.
- Co-organised and chaired over 10 scientific conferences and workshops.

M.Sc. in Cognitive Science

University of Linköping, Department of Computer and Information Science

- Worked on the teaching staff.
- Wrote my master thesis at the University of Osnabrück, Germany.
- Main subjects: Computer Science, Linguistics and Psychology.

B.Sc. in Cognitive Science

University of Linköping, Department of Computer and Information Science

- 9/2011-9/2012: International exchange year at the University of Osnabrück, Germany.
- 06/08 06/10: Sat as Chairman for Kårrullen; the university's largest culture association, yearly turnover: >10 000 €.
- Main subjects: Research Methodology, Computer Science and Psychology.

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4/2014– 3/2018 Magdeburg, Germany

9/2009 - 9/2013 Linköping, Sweden

8/2012 - 11/2013

Linköping, Sweden

Organisational Roles_____

Selected organisational commitments in the past five years, the complete list is available on my website. Date refers to the date of the event, not the duration of the job.

0/2022	Proceedings chair, 12th Formal Ontology in Information Systems (FOIS).	Sherbrooke,
9/2023		Canada
0/2022	Co-chair, Cognition And OntologieS (CAOS VII). Workshop at FOIS 2023.	Sherbrooke,
9/2023		Canada
9/2023	Co-organiser , EPIA track: AI, Generation and Creativity (AIGC).	Faial, Portugal
6/2023	Co-organiser, 35th Workshop of the Swedish AI Society (SAIS).	Karlskrona, Sweden
9/2024	Organiser, The Seventh Image Schema Day Workshop (ISD7). Workshop ad KR 2023	Rhodes, Greece
8/2022	Local organiser / General chair, The Joint Ontology Workshops.	Jönköping, Sweden
8/2022	Co-chair, Cognition And OntologieS (CAOS VI). Workshop at JOWO 2022.	Jönköping, Sweden
6/2022	Program Chair, The 13th International Conference on Computational Creativity (ICCC22).	Bozen, Italy
4/2022	Organiser, The Sixth Image Schema Day Workshop (ISD6).	Jönköping, Sweden
9/2021	Chair, Cognition And OntologieS (CAOS V). Workshop at JOWO@BOSK 2021.	Bozen, Italy
3/2021	Co-organiser and Moderator, TransAIR. Workshop on Robotics.	Virtual / Bremen, DE
2020-21	Publicity-Chair, 11th Formal Ontology in Information Systems (FOIS).	Bozen, Italy
11/2019	Co-Chair, Tricolore 2019	Bozen, Italy
9/2019	Web-Chair, Conference on Knowledge Engineering and Knowledge Management (EKAW).	Bozen, Italy
9/2019	Co-Chair, Cognition and OntologieS (CAOS 4). Workshop at JOWO 2019.	Graz, Austria
12/2018	Local Organiser, TriCoLore: ISD4, C3GI and SCORE.	Bozen, Italy
9/2018	Co-Chair , Early Career Symposium (ECS) at FOIS 2018.	Cape Town, SA
9/2018	Co-Chair, Cognition and OntologieS (CAOS 3). Workshop at JOWO 2018.	Cape Town, SA

Editor and Committee Roles_____

Selected editor and program committee member roles.

	Associate Editor, CEUR Workshop Proceedings (the world's biggest open-access publisher in CS)	CEUR-WS
1/2022 –	Editorial board member, Journal of Applied Ontology	IOS Press
2023	Reviewer, Semantic Web Journal	IOS Press
2022	Reviewer, Cognitive Systems Research	Elsevier
2022	Reviewer, IEEE Transactions on Cognitive and Developmental Systems	IEEE
	Program Committee Member The 12th Fernal Outslam and Information Science (FOIS 2022)	Sherbrooke,
07/2023	Program Committee Member, The 13th Formal Ontology and Information Science (FOIS 2023)	Canada
6/2023	Senior Program Committee Member, The 14th International Conference on Computational Creativity (ICCC 2023)	Waterloo, Canada
5/2022	Program Committee Member, European Semantic Web Conference (ESWC 2022)	Hersonissos, Greece
5/2022	Program Committee Member, 1st Workshop on Modular Knowledge (MK2022)	Hersonissos, Greece
12/2021	Program Committee Member , The Eleventh International Conference on Knowledge Capture (K-Cap 2021)	Virtual
2021	Mentor, Google Summer of Code. Part of the Red Hen Lab.	Virtual
11/2021	Program Committee Member , Technology, Mind and Society. by the American Psychological Association.	Virtual
10/2017-	Hanse-Wissenschaftskolleg (HWK) Study Group Member, Modeling Conceptual Knowledge and	Delmenhorst,
03/2022	Conceptual Change	Germany
6/2021	Program Committee Member, European Semantic Web Conference (ESWC 2021)	Hersonissos, Greece
5/2020	Program Committee Member, European Semantic Web Conference (ESWC 2020)	Heraklion, Greece
11/2019	Program Committee Member, K-Cap 2019: The Tenth International Conference on Knowledge Capture	Marina del Rey, CA, US
9/2019	Program Committee Member , SHAPES 5.0:The Shape of Things	Graz, Austria
11/2018	Program Committee Member , EKAW 2018: International Conference on Knowledge Engineering and Knowledge Management	Nancy, France
9/2018	Program Committee Member , EPINON 2018: Second International Workshop on Epistemology in Ontologies @FOIS	Cape Town, SA
7/2018	Program Committee Member , CreaCogMod 2018: Computational Methods and Systems for the Cognitive Modelling and Support of Creativity and Creative Problem Solving @COGSCI	Madison, Wis, US
9/2017	Program Committee Member , EPINON 2017: First International Workshop on Epistemology in Ontologies @JOWO	Bolzano, Italy

Teaching

Courses in which I develop the whole or part of the content, acted as the main lecturer or was responsible for a large component of the course.

JU: Jönköping University, Sweden; **Uni-Bremen**: University of Bremen, Germany; **UNIBZ**: Free University of Bozen-Bolzano, Italy; **OVGU**: Otto-von-Guericke University Magdeburg, Germany; **LIU**: University of Linköping, Sweden

2021- 2022/23	PhD thesis co-supervision , Co-supervisor to Kaviya Dhanabalachandran at University of Bremen. Master thesis supervision , Supervised / examinated two master theses in the AI Engineering Master.	Uni-Bremen JU
2022/23	Ethics of Artificial Intelligence , Developed the course for AI Engineering masters. Held together with Prof. Riveiro.	JU
2021/22/2	3 Research Methods for Intelligent Systems, Course for AI Engineering masters.	JU
2021	Knowledge Representation and the Semantic Web , Co-developed the course for AI Engineering masters. Held together with Dr. Tan.	JU
2021/22/2	3 Mentoring at Google Summer of Code, Mentoring for The International Distributed Little Red Hen Lab	Virtual
2017	Thesis supervision, Master thesis supervision on conceptual modelling.	UNIBZ
2017	Technical and scientific communication , Course for computer science masters. Together with Prof. Guizzardi.	UNIBZ
2017	Survey of research on the frontiers of computer science , Course for computer science masters. Together with M. Thosar.	OVGU
2015	Seminar on computational creativity, Course for computer science masters. Together with Dr. Neuhaus.	OVGU
2014-15	Study project on image schema formalisation, For computer science masters. Together with Prof. Kutz.	OVGU
2013	Programming and logic, Course for cognitive science bachelors. Role: laboratory assistant.	LIU
2012	Introduction to cognitive science, Course for cognitive science bachelors. Role: laboratory assistant.	LIU
2012	Cognitive modelling, Course for cognitive science bachelors. Role: laboratory assistant.	LIU
2012	Programming and discrete mathematics , Course for cognitive science bachelors. Role: laboratory assistant.	LIU

Invited Speaker_

Invited Researcher at the KRBD	Bolzano, Italy
Free University of Bozen-Bolzano	January, 2023
Offered a visiting scholar grant to conduct joint research.	
Invited speaker at the IAI	Bremen, Germany
University of Bremen	September 5th, 2022
Talk: Semantically, Piecce by Piece: On the value of using conceptual micropatterns in intelligent systems	
Start-up Accelerator Program	Jönköping, Sweden
Science Park	June 8th, 2022
Talk: A Tiny Taste of Ethics of Al	
EASE fall school	Bremen, Germany (Virtual)
University of Bremen	November 10th, 2021
Talk: From Sense to Reason – Using Image Schemas to Intelligently Reason about Objects and Events	
Al-Dagen	Jönköping, Sweden
ELMIA Conference venue	September 30th, 2021
Invited to moderate the event as a AI scientist	
Invited presenter at the institute	Jönköping, Sweden
Jönköping Al Lab	October 27th, 2020
Talk: Image Schemas: Puzzle pieces of thought to ground meaning in AI	
MUHAI kick-off meeting	Venice, Italy
VENICE INTERNATIONAL UNIVERSITY	October 5-9, 2020
Talk: What's the meaning of this? Representing meaning with image schemas	
Invited presenter at the institute	Bellaterra, Spain
IIIA-CSIC	February 7, 2017
Talk: From embodied cognition to formal representation	
Invited presenter at the institute	Dresden, Germany
Technische Universität Dresden	January 5, 2017
Talk: Image schemas in computational concept invention	
Invited presenter at the institute	Bellaterra, Spain
IIIA-CSIC	April 14, 2016
Talk: Concept invention for AI using the cognitive theories of image schemas and conceptual blending	

Selected Skills

Research Statistical Analysis, Quantitative-, Qualitative- and Ethnographic Methodology, Communication and Semantic Analysis, Ontology and Logic, Cognitive and Conceptual Modelling, Eye-Tracking,

 Computer
 Microsoft Office, PowerPoint, Prezi, Python Programming, LaTeX, Wordpress, Photoshop

 Soft
 Teaching, Interpersonal Communication, Leadership, Adaptability, Teamwork, Positive Outlook, Logical Thinking

Languages C2: Swedish, English; B2: German; A2: Spanish, Italian, Japanese

Publications

(Main) Editor of Conference Proceedings

Sales, T., **Hedblom, M.**, Tan, H. (Eds.). (2022). *Proceedings of the Joint Ontology Workshops 2022, Episode VIII: The Svear Sommar of Ontology*. Jönköping, Sweden. August 15-19, 2022. CEUR proceedings Vol-3249

Hedblom, M., Kantosalo, A., Confalonieri, R., Kutz, O., Veale, T. (Eds.). (2022). *Proceedings of the 13th International Conference on Computational Creativity.* Bozen-Bolzano, Italy. June 27-July 1, 2022. ISBN: 978-989-54160-4-2

Hedblom, M., Kutz, O. (Eds.). (2022). Proceedings of the Sixth Image Schema Day 2022: Jönköping, Sweden. March 24-25th, 2022. CEUR proceedings Vol-3140

Kutz, O., **Hedblom M. M.**, Besold, T.R., Confalonieri, R., León, C., Veale, T. and Bateman, J. *Proceedings of TriCoLore 2018: The 7th International Workshop on Computational Creativity, Concept Invention, and General Intelligence (C3GI 2018), The 4th Image Schema Day (ISD4), and SCORE: From Image Schemas to Cognitive Robotics*, Bozen-Bolzano, Italy. December 13-15, 2018. CEUR proceedings Vol-2347

Books and Book Chapters

Hedblom, M.M., *Methodological reflection of the documentalysis of .co.kr from the %WRONG Browser series*. In Hinterwaldner et al (eds): Navigation, SPP Heft, Universitätsverlag LMU, München 2022. ISBN: 978-3-487-16315-4. doi: 10.5282/ubm/epub.93518

Hedblom, M.M., *Image Schemas and Concept Invention: Cognitive, Logical, and Linguistic Investigations*. Cognitive Technologies book series, Springer Verlag ISBN 978-3-030-47328-0

Hedblom, M.M., Kutz, O. and Neuhaus, F., *Image schemas in Concept Invention*. In Confalonieri et al. (Eds.), Concept Invention: Foundations, Implementation, Social Aspects and Applications, Springer Verlag (2018). **doi:** 10.1007/978-3-319-65602-1_4

Articles in Peer-Reviewed Scientific Journals

Pomarlan, M., **Hedblom, M.M.**, and Porzel, R., *Curiously Exploring Affordance Spaces of a Pouring Task*. Expert Systems (December, 2022) **doi:**10.1111/exsy.13213

Höffner, S, Porzel, R., **Hedblom, M.M.**, Pomarlan, M., Cangalovic, V. S., Pfau, J., Bateman, J. and Malaka, R., *Deep Understanding of Everyday Activity Commands for Household Robots*. Semantic Web Journal 13(5):985-909 (August, 2022). **doi:** 10.3233/SW-222973

Hedblom, M.M., Kutz, O., Peñaloza, R. and Guizzardi, G., *Image schema combinations and complex events*. Künstliche Intelligenz (Special issue on Cognitive Reasoning) 33: 279–291 (July, 2019). doi: 10.1007/s13218-019-00605-1

Besold, T. R., **Hedblom, M.M.** and Kutz, O.,*A narrative in three acts: Using combinations of image schemas to model events*. Biological Inspired Cognitive Architectures 19:10-20 (2017). **doi:** 10.1016/j.bica.2016.11.001

Hedblom, M.M., Kutz, O. and Neuhaus, F., *Image schemas in computational conceptual blending*. Cognitive Systems Research 39:42–57 (2016). doi: 10.1016/j.cogsys.2015.12.010

Hedblom, M.M., Kutz, O. and Neuhaus, F., *Choosing the Right Path: Image Schema Theory as a Foundation for Concept Invention*. Journal of Artificial General Intelligence 6(1):21–54 (2015). **doi:** 10.1515/jagi-2015-0003

Articles in Peer-Reviewed Conference Proceedings

Pomarlan, M., **Hedblom, M.M.**, De Giorgis, S., Diab, M., and Tsiogkas, N. *Thinking in front of the box: Towards intelligent robotic action selection for navigation in complex environments using image-schematic reasoning*. In Proc. of 8th JOWO. Jönköping, Sweden (August, 2022)

Dhanabalachandran, K., **Hedblom, M.M.**, and Beetz, M., *A Balancing Act: Ordering Algorithm and Image-Schematic Action Descriptors for Stacking Object for Household Robots*, In Proc. of 8th JOWO. Jönköping, Sweden (August, 2022)

Righetti, G., Porello, D., Troquard, N., Kutz, O., **Hedblom M.M.** and Galliani, P., *Asymmetric Hybrids: Dialogues for Computational Concept Combination*. In Proc. of the 31st IJCAI - Sister Conferences Best Paper Track, pp.5329-5333. Vienna, Austria (July, 2022). **doi:** 10.24963/ijcai.2022/745

Hedblom, M.M., and Neuhaus, F., *Visualising Image Schemas: A Preliminary Look on the Diagrammatic Image Schema Language* (*DISL*), In Proc. of ISD6. Jönköping, Sweden (April, 2022)

Dhanabalachandran, K., **Hedblom, M.M.**, and Beetz, M., *Getting On Top of Things: An Extended Abstract on Robotic Object Stacking using Image-Schematic Reasoning*, In Proc. of ISD6. Jönköping, Sweden (April, 2022)

Pomarlan, M., **Hedblom, M.M.**, and Porzel, R., *Panta Rhei: Curiosity-Driven Exploration to Learn the Image-Schematic Affordances of Pouring Liquids*, In Proc. of the 29th AISC, CEUR-WS Vol 3105. Dublin, Ireland (Virtual conference) (December, 2021)

Dhanabalachandran, K., Hassouna, V., **Hedblom, M.M.**, Kuempel, M., Leusmann, N., and Beetz, M., *Cutting Events: Towards Autonomous Plan Adaption by Robotic Agents through Image-Schematic Event Segmentation*, In Proc. of The 11th Int. Conf. on Knowledge Capture (K-CAP), Virtual conference (December, 2021) **doi:** 10.1145/3460210.3493585

Righetti, G., Porello, D., Troquard, N., Kutz, O., **Hedblom M.M.** and Galliani, P., *Asymmetric Hybrids: Dialogues for Computational Concept Combination*. In Brodaric, B., Neuhaus, F. (eds) Formal Ontology and Information Systems (FOIS 2021) IOS Press. Bolzano, Italy (September, 2021). **doi:** 10.3233/FAIA210373 (Winner of the Best Paper Award)

Hedblom M.M., Righetti, G., and Kutz, O., *Deciphering The Cookie Monster: A case study in impossible combinations*. In Proc. of Int. Conf. on Computational Creativity (ICCC 2021), p. 222-225. Mexico City, Mexico (Virtual conference) (September, 2021).

Hedblom, M.M., Pomarlan, M., Porzel, R., Malaka, R., and Beetz, M., *Dynamic Action Selection Using Image Schema-based Reasoning for Robots*. In Proc. of 7th JOWO. Bolzano Italy (September, 2021)

Hedblom, M.M. and Kutz, O., *Conceptual Puzzle Pieces: An image schema experiment on object conceptualisation*. In Bella G., Bouquet P. (eds) Modeling and Using Context. CONTEXT 2019. LNCS, vol 11939. Springer, p. 98-111. Trento, Italy (November, 2019). **doi:** 10.1007/978-3-030-34974-5_9

Hedblom, M.M. and Kutz, O., *gninaeM neddiH: Using image schema violations to expose hidden semantical structures in metaphors*. In Proc. of 5th JOWO. Graz, Austria (September, 2019)

Hedblom, M.M., Kutz, O., Peñaloza R. and Guizzardi, G., *Hold—Drop—Smash: Image Schema Combinations and Complex Events*. In Proc. at AIC 2019. Manchester, UK (September, 2019)

Guizzardi, G., Figueiredo, G., **Hedblom, M.M.**, and Poels, G., Ontology-Based Model Abstraction. In Proc. IEEE Thirteen International Conference on Research Challenges in Information Science (RCIS), Brussel, Belgium (May, 2019). pp. 1-13 **doi:** 10.1109/RCIS.2019.883

Verdonck, M., **Hedblom, M.M.**, Guizzardi, G., Figueiredo, G., Gailly, F., and Poels, G., *An Empirical Study Concerning Ontology-Driven Modularization and Ontology-Neutral Modularization Techniques*. In Proc. of VMBO (2019).

Hedblom, M.M., Kutz, O., Peñaloza, R. and Guizzardi, G., *What's Cracking? How image schema combinations can model conceptualisations of events*. In Proc. of TriCoLore (December, 2018).

Kutz, O., Troquard, N., **Hedblom, M.M.** and Porello, D., *The Mouse and the Ball: Towards a cognitively-based and ontologically*grounded logic of agency. In Proc. of FOIS (2018).

Hedblom M.M., Peñaloza, R., Kutz, O. and Guizzardi, G., *Under the Super-Suit: What Superheroes Can Reveal About Inherited properties in Conceptual Blending*. In Proc. of ICCC, Salamanca, Spain, (2018) p. 216-223.

Figueiredo, G., Duchardt, A., **Hedblom, M.M.**, and Guizzardi, G., *Breaking into Pieces: An Ontological Approach to Conceptual Model Complexity Management*. In Proc. of RCIS. Nantes, France (2018). **doi:** 10.1109/RCIS.2018.8406642

Hedblom, M.M., Gromann, D, and Kutz, O., *In, Out and Through: Formalising some dynamic aspects of the image schema Containment*. In Proc. of KKR@SAC, Pau, France, (2018) p. 918-925. **doi:** 10.1145/3167132.3167233

Gromann, D. and **Hedblom, M.M.**, *Body-Mind-Language: Multilingual Knowledge Extraction Based on Embodied Cognition*. In Proc. of AIC, CEUR-WS: Vol-2090, Lanarca, Cyrpus (2017).

Gromann, D. and **Hedblom, M.M.**, *Image Schemas and Conceptual Dependency Primitives: A Comparison, Jamie Macbeth*. In Proc. of JOWO, Bolzano, Italy (2017).

Hedblom, M.M., *Beneath the Paint: A Visual Journey through Conceptual Metaphor Violation*. In Proc. of 5th JOWO. Bolzano, Italy (2017).

Hedblom, M.M., Kutz, O., Mossakowski, T., and Neuhaus, F., *Between Contact and Support: Introducing a logic for image schemas and directed movement*. In Proc. of AI*IA. Bari, Italy (2017).

Gromann, D. and **Hedblom, M.M.**, *Kinesthetic Mind Reader: A Method to Identify Image Schemas in Natural Language*. In Proc. of Advancements in Cognitive Systems (ACS), Troy, New York, US (2017).

Gromann, D., **Hedblom, M.M.**, *Breaking Down Finance: A method for concept simplification by identifying movement structures from the image schema PATH-following*. In Proc. of 4th JOWO. Annecy, France (2016).

Kutz, O., Neuhaus, F., **Hedblom, M.M.**, Mossakowski, T. and Codescu, M., *Ontology Patterns with DOWL: The Case of Blending*. In Proc. of the 29th Description Logic (DL) Workshop, Cape Town (2016).

Hedblom, M.M. and Kutz, O., *Shape up, baby! Perception, image schemas and shapes in concept formation*. In Proc. of Shapes 3.0 Workshop, Lanarca (2015).

Hedblom, M.M., Kutz, O. and Neuhaus, F., *Image schemas as families of theories*. In Proc. of C3GI Workshop, held at UNILOG, p. 19-33. Istanbul, Turkey (2015).

Hedblom, M.M., Kutz, O., and Neuhaus, F., *On the cognitive and logical role of image schemas in computational conceptual blending*. In Proc. of 2nd Artificial Intelligence and Cognition workshop (AIC). Torino, p. 110-121 (2014).