Christoph Salge

Reader in Artificial Intelligence in Games · Head of the Social and Game Intelligence Lab

University of Hertfordshire, Hatfield, UK

c.salge@herts.ac.uk · christophsalge.com · Google Scholar · ORCID · University profile · GDMC

PROFILE

My research asks what makes agents do things in the first place, and how to model that. Since 2011 I have worked on **empowerment** and other information-theoretic intrinsic motivations. One main direction I have applied this to is **games and procedural content generation**: I build agents and generators that adapt to their environment and to the people they play or create with, and I founded the Generative Design in Minecraft Competition (GDMC), an open-ended generative-AI challenge run every year since 2018. In **AI alignment and safety**, I have used intrinsic motivation to develop behavioural primitives that preserve human agency as well as the agent's own. I am also interested in how different motivations give rise to **social interaction**, including co-creativity, and how those interactions are perceived. An overarching theme of my work is to explore the many facets of a **human–AI society**, and how we can shape it.

I have published 60 peer-reviewed papers (17 in journals) across AI, games, artificial life, human–robot interaction and history, with more than 40 co-authors; h-index 22 (Google Scholar, October 2026). I have supervised five PhDs to completion and lead a research lab at the University of Hertfordshire.

RESEARCH THEMES AND SELECTED WORK

1 · Games and procedural content generation

The AI Settlement Generation Challenge in Minecraft · Salge et al., KI – Künstliche Intelligenz 2020; Salge et al., FDG 2022

Founding paper and five-year retrospective of GDMC, a benchmark for holistic, adaptive generation judged by people rather than a fixed metric.

Evaluating open-ended generation · Hervé, Salge & Warpefelt, IEEE Transactions on Games 2023; Hervé & Salge, FDG 2021; Hervé et al., AIIDE workshop 2023

What human judges actually reward, how far automatic PCG metrics agree with them, and generative shift analysis for comparing generators.

Terrain-adaptive and organic generation · van der Staaij, Preuss & Salge, IEEE CoG 2024; Green, Salge & Togelius, FDG 2019; Salge & Hervé, FDG 2022

Machine-learned and procedural methods for buildings and settlements that fit unseen terrain, and automated isovist analysis of what players see.

Intrinsically motivated companion and adversary NPCs · Guckelsberger, Salge & Colton, IEEE CIG 2016; Guckelsberger, Salge & Togelius, IEEE CIG 2018 · **Best Paper Award 2018**

One coupled-empowerment objective produces general companion NPCs, or, with the sign flipped, a spectrum of adversaries from opportunists to super-villains.

Game design and player experience · Salge & Mahlmann, IEEE CIG 2010; Guckelsberger et al., CHI PLAY 2017; Salge et al., IEEE CoG 2020

Information-theoretic evaluation of game mechanics, predicting player experience without players, and AI in live-action role-playing games.

Mars Needs Robots · chamber LARP, free to download

A game I designed about AI and robot personhood, how ideas become law, and how the people in the room at a pivotal moment can shape history.

2 · AI alignment and safety: preserving human agency and self-agency

Empowerment as Replacement for the Three Laws of Robotics · Salge & Polani, Frontiers in Robotics and AI 2017

Turns self-preservation, protection of a human partner and responsiveness to human actions into information-theoretic quantities, without relying on natural-language rules.

Coupled Empowerment Maximisation · Guckelsberger, Salge & Colton, IEEE CIG 2016 and ICCC 2016

An agent maximises its own empowerment while also maximising a human's: a general, task-independent formalisation of supportive behaviour.

Process Empowerment · Tiomkin, Salge & Polani, J. Physics: Complexity 2025

A more robust formulation of empowerment as an intrinsic motivation.

Empowerment – An Introduction · Salge, Glackin & Polani, in Guided Self-Organization: Inception, Springer 2014

The standard introduction to empowerment, and still a reference point for machine-learning work on estimating and maximising it.

Agent failure modes and benchmark design · Anderson et al., EvoApplications 2018; Bontrager et al., AIIDE 2019; Stephenson et al., IEEE CEC 2020; Canaan et al., FDG 2019

Games built to mislead AI agents expose systematic failures of planning and deep reinforcement learning agents; methods for choosing maximally discriminative benchmark problems and for fair AI-versus-human comparisons.

3 · Social interaction, co-creativity and the human–AI society

Motivations that create social interaction · Salge & Polani, JASSS 2011; van der Heiden, van Hoof, Gavves & Salge, ALIFE 2022

Digested information as a non-semantic motivation for interacting with other agents, and transfer empowerment, a social intrinsic motivation for reliably reacting to a partner's actions.

Co-creativity and creative agency · Guckelsberger, Salge, Saunders & Colton, ICCC 2016; Guckelsberger, Salge & Colton, ICCC 2017

Supportive and antagonistic behaviour in distributed computational creativity, and a minimal, non-anthropocentric model of intentional creative agency.

How people perceive motivated agents · Scheunemann, Salge, Polani & Dautenhahn, Adaptive Behavior 2022; Scheunemann, Cuijpers & Salge, RO-MAN 2020

Human perception of intrinsically motivated autonomy in robots, and warmth and competence as predictors of which robot behaviour people prefer.

Norms, institutions and legal responsibility · Benthall & Salge, in press 2026; Anagnou, Salge & Lewis, COINE @ AAMAS 2025; Anagnou, Polani & Salge, ALIFE 2023

An enactive account of AI and legal responsibility, alongside multi-agent models of how norms and institutions emerge.

GENERATIVE DESIGN IN MINECRAFT (GDMC)

2017 – present **Founder and lead organiser**, AI Settlement Generation Challenge in Minecraft

- Annual open AI competition, first run in 2018: entrants submit algorithms that build a settlement adapted to an unseen Minecraft map, judged by human experts on adaptation, functionality, narrative and aesthetics.
- Research programme on evaluating open-ended generative systems, with many participants publishing work based on their entries; a research list is kept on the GDMC wiki.
- Featured by MIT Technology Review and in an urban planner's review of GDMC cities (0.5M views).

PROFESSIONAL POSITIONS

08/2022 – present **Reader in Artificial Intelligence in Games; Head of the Social and Game Intelligence Lab**
University of Hertfordshire, UK

09/2021 – 08/2022 **Senior Research Fellow**
Adaptive Systems Research Group, University of Hertfordshire, UK

01/2020 – 09/2021 **Research Fellow**
Adaptive Systems Research Group, University of Hertfordshire, UK

12/2016 – 12/2019 **Marie Skłodowska-Curie Global Fellow**, personal fellowship for the INTERCOGAM project
Adaptive Systems Research Group, University of Hertfordshire, UK, and Game Innovation Lab, New York University, US

03/2015 – 11/2016 **Postdoctoral Research Fellow**, EU Horizon 2020 project SocSMCs
Adaptive Systems Research Group, University of Hertfordshire, UK

05/2011 – 02/2015 **Postdoctoral Research Fellow**, EU FP7 project CORBYS
Adaptive Systems Research Group, University of Hertfordshire, UK

EDUCATION

12/2007 – 05/2013 **PhD, "Information-Theoretic Models of Social Interaction"**
University of Hertfordshire, UK; joint Computer Science and Philosophy
Supervisors: Daniel Polani, Daniel Hutto and Luciano Floridi
Thesis

10/2002 – 11/2007 **Diplom-Informatiker** (five-year degree, MSc equivalent), TU Braunschweig, Germany

01/2007 – 03/2007 **Visiting Scholar**, Advanced Graphics Lab, University of New Mexico, US

FELLOWSHIPS AND GRANTS

2016 – 2019 Marie Skłodowska-Curie Global Fellowship, EU grant 705643, INTERCOGAM (main applicant; 3 years, 100% of time funded)

2007 – 2011 Interfaculty (Computer Science and Philosophy) PhD Scholarship, University of Hertfordshire

2007	TU Braunschweig Scholarship, Germany
2002 – 2007	Fellow of the German National Academic Foundation (Studienstiftung des deutschen Volkes)

AWARDS

2018	Best Paper Award, IEEE Conference on Computational Intelligence and Games (CIG 2018), for "New and Surprising Ways to be Mean"
2018	Best Paper Award nominee, IEEE CIG 2018, for "Accelerating Empowerment Computation with UCT Tree Search"

SUPERVISION

Since 2016	Five completed PhDs: Christian Guckelsberger, Marcus Scheunemann, Simon McCool, Victoire Herve, Stavros Anagnou. Four ongoing PhD students, two as main supervisor.
Since 2010	Around 60 Master's students, University of Hertfordshire

TEACHING

2023 – present	Lecturer and module designer, **Social and Collective Intelligence** (BSc, Level 6)
2023 – present	Guest lectures on Ethics in AI, Advanced Artificial Intelligence (BSc, Level 6)
2020 – present	Module Leader, **Artificial Intelligence Programming** (online MSc, Level 7; three runs a year, with SkillEd)
2021 – 2025	Lecturer, Responsible Technology (MSc, Level 7)
2018	Module Leader, **Philosophical and Societal Implications of AI**, New York University (designed and taught the full 37-hour module)
2017 – 2018	Lectures on Artificial Intelligence and on AI in Games, New York University
2003 – 2006	Teaching assistant, Analysis and software engineering projects, TU Braunschweig

ORGANISATION OF SCIENTIFIC MEETINGS

2026	Program Chair, ALIFE 2026 (International Conference on Artificial Life), Canada
2026	Competition Chair, IEEE Conference on Games (CoG 2026)
2025	General Chair, Intrinsically Motivated Open-Ended Learning Workshop (IMOL), Hatfield, UK
2025	Workshop and Competition Chair, Foundations of Digital Games (FDG 2025)
2023 – 2024	Doctoral Consortium Chair, Foundations of Digital Games (FDG 2023 and 2024)
2019 – 2021	Workshop organiser, User Experience with AI in Games, FDG 2019, 2020 and 2021
2021	Workshop organiser, Procedural Content Generation, FDG 2021
2019	Track Chair, Competitions and Benchmarks, IEEE Conference on Games
2018	Proceedings Chair, Foundations of Digital Games (FDG 2018)
2017	Founder and organiser, GDMC AI Settlement Generation Challenge in Minecraft
2017	Local Chair, IEEE Conference on Computational Intelligence and Games (CIG 2017)
2016	Tutorial, Intrinsic Motivation in General Game-Playing and NPCs, IEEE CIG 2016
2015	Organiser, three-day workshop "Information and Decision Making", Hatfield, UK
2015	Organiser, ECAL special track "Quantifying Embodiment" and satellite workshop "Information Theory in Artificial Life", York, UK
2014	Organiser, ALIFE satellite workshop "Information-Theoretic Incentives for Artificial Life", New York, US
2011	Local organiser, Fourth International Workshop on Guided Self-Organization, Hatfield, UK

EDITORIAL WORK AND REVIEWING

Since 2017	Associate Editor, *Adaptive Behavior*
2021	Guest Editor, special issue "User Experience with AI in Games", *IEEE Transactions on Games*
2014 – 2015	Guest Editor, special issue "Information Theoretic Incentives for Cognitive Systems", *Entropy*
Ongoing	**Programme committees:** NeurIPS, IJCAI, AAAI, IEEE CoG (formerly CIG), ALIFE, ECAL, FDG
Ongoing	**Journal reviewing:** IEEE Transactions on Games, Advances in Complex Systems, Entropy, Frontiers, Adaptive Behavior
Ongoing	**Grant and book reviewing:** Polish and Spanish national science foundations; MIT Press

INSTITUTIONAL RESPONSIBILITIES

2025 – present	Member, DC AI Working Group, writing the University of Hertfordshire's AI guidelines
2024 – present	REF Coordinator, Unit of Assessment 11 (Computer Science and Informatics), University of Hertfordshire
2009 – 2011	PhD student representative (Computer Science, then university-wide) and member of the University Research Board, University of Hertfordshire
2004	Full-time head of student government (AStA-Vorstand, six months), TU Braunschweig

GAME DESIGN, EDUCATION AND OUTREACH

2005 – 2007	Lead designer, computer game project "Rise of Atlantis"
2022	One-day course on empowerment, EADS Summer School, University of Essex
2012 – 2013	Designed and ran 50-hour courses "Phänomen Spiel" (Phenomenon Game) and "Künstliches Leben" (Artificial Life) at the international summer school of the Deutsche Schülerakademie, for gifted students aged 16–18 from five EU countries

MEDIA

My work has been covered by WIRED, MIT Technology Review, Scientific American, the BBC, Psychology Today, Newsweek and others. Selected examples:

- WIRED interview: How to build a robot that won't take over the world
- MIT Technology Review on the GDMC AI Settlement Generation Challenge
- An urban planner reviews Minecraft cities (YouTube video featuring GDMC, 0.5M views)
- Burning Man Philosophical Center: An empowering robot is an ethical robot
- Bad Science: The Fiction and Reality of The Matrix (podcast with live audience)
- Gamedev Graveyard #25: Generative Design in Minecraft (podcast)
- Microsoft Research AI and Gaming Research Summit (talk)

INVITED TALKS AND KEYNOTES

Talks at workshops and other institutions; conference talks with an associated paper are not listed.

2025	Keynote, workshop "Creativity in the Age of Generative AI", University of Malta
2024	"The AI Settlement Generation Challenge in Minecraft", invited talk, AI and Games Conference, Goldsmiths, London
2024	"Empowerment", invited talk, Workshop on Causal Incentives, Oxford
2024	"An Introduction to Artificial Intelligence", keynote, staff day, North Hertfordshire College
2023	"AI, Games and Humans", keynote, annual SPECS research conference, University of Hertfordshire
2022	"Generative Design in Minecraft – the 5th AI Settlement Generation Challenge", invited talk, Game AI Meetup, Queen Mary University of London
2021	"AI Settlement Generation Challenge", invited speaker, Microsoft Research AI and Gaming Research Summit (online)
2020	Invited speaker, Combining Information-Theoretic Perspectives on Agency workshop, Tokyo
2019	"Empowerment and Games", invited talk, Honda Research Institute, Offenbach, Germany
2018	"A Short Introduction to Empowerment – an Information-Theoretic Intrinsic Motivation", Institute for Advanced Study, Princeton, US
2018	"Consciousness, Intrinsic Motivation and Empowerment: You can do what you want, but you cannot want what you want", Consciousness Club, YHouse, New York, US
2016	"Dealing with Noise and Other Agents: The Empowerment of Controller Selection", Workshop on Guided Self-Organization, ALIFE 2016, Cancún, Mexico
2016	"Changing the Environment Based on Empowerment as Intrinsic Motivation", invited talk, Lund University, Sweden
2015	Tutorial on multi-agent modelling, invited talk, University of Cologne, Germany
2015	"Behaviour Motivated by Information", workshop "Information and Decision Making", Hatfield, UK
2015	"Swarm Behaviour Motivated by Information", ECAL workshop "Information Theory in Artificial Life", York, UK

2014 “Empowerment: a Route towards the Three Laws of Robotics”, Workshop on Guided Self-Organization, Freiburg, Germany

2014 “Changing the Environment Based on Empowerment as Intrinsic Motivation”, invited talk, IT University of Copenhagen, Denmark

2013 Same title, Max Planck Institute for Mathematics in the Sciences, Leipzig, and Workshop on Guided Self-Organization, Barcelona

2012 “Empowerment and its Extension to the Continuous Domain”, invited talk, IROS 2012 workshop on metrics of sensorimotor integration

2012 “Approximation of Empowerment in the Continuous Domain”, Workshop on Guided Self-Organization, Sydney, Australia

2011 “Digested Information: From Information-Theoretic Behaviour Generation towards Agent–Agent Interaction”, Middlesex University and Workshop on Guided Self-Organization, Hatfield

2011 “Is the Computer Having Fun? Automatic Game Mechanics Evaluation with Information Theory”, IT University of Copenhagen, Denmark

2008 “Using Genetically Optimized AIs to Improve Gameplaying Fun for Strategy Games”, UK AI Research in Games event, Essex

METHODS

Information theory (channel capacity, empowerment and its approximations), intrinsic motivation and reinforcement learning, Monte Carlo tree search, procedural content generation, multi-agent and evolutionary models, human-subject evaluation.

PUBLICATIONS

Full and up-to-date list on Google Scholar.

Journal articles

2026 Benthall, S., **Salge, C.**: An Enactive Approach to Artificial Intelligence and Legal Responsibility. In press.

2025 Tiomkin, S., **Salge, C.**, Polani, D.: Process Empowerment for Robust Intrinsic Motivation. Journal of Physics: Complexity 6(3), 035011.

2023 Hervé, J.-B., **Salge, C.**, Warpefelt, H.: An Examination of the Hidden Judging Criteria in the Generative Design in Minecraft Competition. IEEE Transactions on Games 16(3), 635–644.

2023 Catenacci Volpi, N., Greaves, M., Trendafilov, D., **Salge, C.**, Pezzulo, G., Polani, D.: Skilled Motor Control of an Inverted Pendulum Implies Low Entropy of States but High Entropy of Actions. PLoS Computational Biology 19(1), e1010810.

2022 Scheunemann, M., **Salge, C.**, Polani, D., Dautenhahn, K.: Human Perception of Intrinsically Motivated Autonomy in Human–Robot Interaction. Adaptive Behavior 30(5), 451–472.

2020 **Salge, C.**, Green, M. C., Canaan, R., Skwarski, F., Fritsch, R., Brightmoore, A., Ye, S., Cao, C., Togelius, J.: The AI Settlement Generation Challenge in Minecraft. KI – Künstliche Intelligenz 34(1), 19–31.

2020 Guckelsberger, C., **Salge, C.**, Polani, D.: The Relationship of Future State Maximization and von Foerster’s Ethical Imperative Through the Lens of Empowerment. Constructivist Foundations 16(1), 57–60.

2019 Robu, A. D., **Salge, C.**, Nehaniv, C. L., Polani, D.: Measuring Time with Minimal Clocks. Artificial Life.

2018 Biehl, M., Guckelsberger, C., **Salge, C.**, Smith, S., Polani, D.: Expanding the Active Inference Landscape: More Intrinsic Motivations in the Perception–Action Loop. Frontiers in Neurorobotics 12.

2017 **Salge, C.**, Polani, D.: Empowerment as Replacement for the Three Laws of Robotics. Frontiers in Robotics and AI 4.

2017 Goetter, C., **Salge, C.**: From Deep Blue to Blade Runner – The Portrayal of Artificial Intelligence in the Fallout Game Series. PAIDIA special issue on the portrayal of science and technology in digital games.

2017 Goetter, C., **Salge, C.**: Die Mechanismen der Geschichte im Spiel. Portal Militärgeschichte, special issue “Krieg im Computerspiel”, ed. M. Clauss, M. Munke, M. Pöhlmann.

2015 **Salge, C.**, Ay, N., Polani, D., Prokopenko, M.: Zipf’s Law: Balancing Signal Usage Cost and Communication Efficiency. PLoS ONE 10(10), e0139475.

2014 **Salge, C.**, Glackin, C., Polani, D.: Changing the Environment Based on Empowerment as Intrinsic Motivation. Entropy 16(5), 2789–2819.

2013 Harder, M., **Salge, C.**, Polani, D.: A Bivariate Measure of Redundant Information. Physical Review E 87(1), 012130.

2012 **Salge, C.**, Glackin, C., Polani, D.: Approximation of Empowerment in the Continuous Domain. Advances in Complex Systems 16(01n02).

2011 **Salge, C.**, Polani, D.: Digested Information as an Information Theoretic Motivation for Social Interaction. Journal of Artificial Societies and Social Simulation 14(1).

2009 **Salge, C.**, Polani, D.: Information Driven Organization of Visual Receptive Fields. Advances in Complex Systems 12(3), 311–326.

Conference and workshop papers

2026 Archer, K., **Salge, C.**, Catenacci Volpi, N., Polani, D.: Habits have Geometry: Action Representation as Morphological Computation. ALIFE 2026, MIT Press.

2025 Anagnou, S., **Salge, C.**, Lewis, P.: Uncertainty, Bias and the Institution Bootstrapping Problem. COINE workshop at AAMAS 2025.

2024 van der Staaij, A., Preuss, M., **Salge, C.**: Terrain-Adaptive PCGML in Minecraft. IEEE Conference on Games (CoG 2024), 1–8.

2023 Anagnou, S., Polani, D., **Salge, C.**: The Effect of Noise on the Emergence of Continuous Norms and its Evolutionary Dynamics. ALIFE 2023, 125.

2023 Hervé, J.-B., Withington, O., Hervé, M., Tokarchuk, L., **Salge, C.**: Exploring Minecraft Settlement Generators with Generative Shift Analysis. EXAG workshop, AIIDE 2023.

2022 van der Heiden, T., van Hoof, H., Gavves, E., **Salge, C.**: Reliably Re-Acting to Partner's Actions with the Social Intrinsic Motivation of Transfer Empowerment. ALIFE 2022, MIT Press.

2022 **Salge, C.**, Aranha, C., Brightmoore, A., Butler, S., De Moura Canaan, R., Cook, M., … Togelius, J.: Impressions of the GDMC AI Settlement Generation Challenge in Minecraft. FDG 2022, 1–16.

2022 **Salge, C.**, Hervé, J.-B.: Automated Isovist Computation for Minecraft. FDG 2022, 1–9.

2021 Hervé, J.-B., **Salge, C.**: Comparing PCG Metrics with Human Evaluation in Minecraft Settlement Generation. FDG 2021, 1–15.

2020 Scheunemann, M. M., Cuijpers, R. H., **Salge, C.**: Warmth and Competence to Predict Human Preference of Robot Behavior in Physical Human–Robot Interaction. IEEE RO-MAN 2020, 1340–1347.

2020 **Salge, C.**, Short, E., Preuss, M., Samothrakis, S., Spronck, P.: Applications of Artificial Intelligence in Live Action Role-Playing Games (LARP). IEEE CoG 2020, 612–619.

2020 Stephenson, M., Anderson, D., Khalifa, A., Levine, J., Renz, J., Togelius, J., **Salge, C.**: A Continuous Information Gain Measure to Find the Most Discriminatory Problems for AI Benchmarking. IEEE CEC 2020, 1–8.

2019 Bontrager, P., Khalifa, A., Anderson, D., Stephenson, M., **Salge, C.**, Togelius, J.: Superstition in the Network: Deep Reinforcement Learning Plays Deceptive Games. AIIDE 2019.

2019 Ashlock, D., **Salge, C.**: The Riddle of Togelby. IEEE CoG 2019, London.

2019 Green, M. C., **Salge, C.**, Togelius, J.: Organic Building Generation in Minecraft. FDG 2019, San Luis Obispo.

2019 **Salge, C.**, Guckelsberger, C., Green, M. C., Canaan, R., Togelius, J.: Generative Design in Minecraft: Chronicle Challenge. ICCC 2019, Charlotte.

2019 Scheunemann, M. M., **Salge, C.**, Dautenhahn, K.: Intrinsically Motivated Autonomy in Human–Robot Interaction: Human Perception of Predictive Information in Robots. TAROS 2019, London.

2019 Ashlock, D., **Salge, C.**: Automatic Generation of Level Maps with the Do What's Possible Representation. IEEE CoG 2019, London.

2019 Canaan, R., **Salge, C.**, Togelius, J., Nealen, A.: Leveling the Playing Field: Fairness in AI Versus Human Game Benchmarks. FDG 2019, San Luis Obispo.

2018 Guckelsberger, C., **Salge, C.**, Togelius, J.: New and Surprising Ways to be Mean: Adversarial NPCs with Coupled Empowerment Minimisation. IEEE CIG 2018, Maastricht. **Best Paper Award.**

2018 **Salge, C.**, Guckelsberger, C., Canaan, R., Mahlmann, T.: Accelerating Empowerment Computation with UCT Tree Search. IEEE CIG 2018, Maastricht. Best Paper Award nominee.

2018 de Mesentier Silva, F., **Salge, C.**, Isaksen, A., Togelius, J., Nealen, A.: Drawing without Replacement as a Game Mechanic. FDG 2018, Malmö.

2018 Anderson, D., Stephenson, M., Togelius, J., **Salge, C.**, Levine, J., Renz, J.: Deceptive Games. EvoApplications 2018, Parma.

2017 Guckelsberger, C., **Salge, C.**, Gow, J., Cairns, P.: Predicting Player Experience Without the Player: An Exploratory Study. CHI PLAY 2017.

2017 Guckelsberger, C., **Salge, C.**, Colton, S.: Addressing the “Why?” in Computational Creativity: A Non-Anthropocentric, Minimal Model of Intentional Creative Agency. ICCC 2017, Atlanta.

2017 Robu, A. D., **Salge, C.**, Nehaniv, C. L., Polani, D.: Time as it Could Be Measured in Artificial Living Systems. ECAL 2017, Lyon.

2016 Guckelsberger, C., **Salge, C.**, Colton, S.: Intrinsically Motivated General Companion NPCs via Coupled Empowerment Maximisation. IEEE CIG 2016.

2016 Guckelsberger, C., **Salge, C.**: Does Empowerment Maximisation Allow for Enactive Artificial Agents? ALIFE 2016.

2016 Guckelsberger, C., **Salge, C.**, Saunders, R., Colton, S.: Supportive and Antagonistic Behaviour in Distributed Computational Creativity via Coupled Empowerment Maximisation. ICCC 2016.

2016 Götter, C., **Salge, C.**: The Mechanisms of History at Play. Workshop “Krieg und organisierte Gewalt im Computerspiel”, Chemnitz.

2015 Glackin, C., et al.: Learning Gait by Therapist Demonstration for Natural-Like Walking with the CORBYS Powered Orthosis. IEEE/RSJ IROS 2015.

2014 Glackin, C., et al.: Gait Trajectory Prediction Using Gaussian Process Ensembles. IEEE-RAS Humanoids 2014.

2014 **Salge, C.**, Polani, D.: Don’t Believe Everything You Hear: Preserving Relevant Information by Discarding Social Information. ALIFE 2014.

2014 Biehl, M., **Salge, C.**, Polani, D.: Towards Designing Artificial Universes for Artificial Agents under Interaction Closure. ALIFE 2014.

2013 **Salge, C.**, Glackin, C., Polani, D.: Empowerment and State-Dependent Noise: An Intrinsic Motivation for Avoiding Unpredictable Agents. ECAL 2013, 118–125.

2013 Leu, A., Ristić-Durrant, D., Slavnić, S., Glackin, C., **Salge, C.**, Polani, D., Badii, A., Khan, A., Raval, R.: CORBYS Cognitive Control Architecture for Robotic Follower. IEEE/SICE International Symposium on System Integration 2013.

2011 **Salge, C.**, Polani, D.: Local Information Maximisation Creates Emergent Flocking Behaviour. ECAL 2011, 688–696.

2010 **Salge, C.**: Digested Information, a Non-Semantic Motivation for Agent–Agent Interaction. ECAP 2010, Munich.

2010 **Salge, C.**, Polani, D.: Extended Abstract: From Infotaxis to Boids-like Swarm Behaviour. ALIFE 2010, Odense.

2010 **Salge, C.**, Mahlmann, T.: Relevant Information as a Formalised Approach to Evaluate Game Mechanics. IEEE CIG 2010, Copenhagen, 281–288.

2008 **Salge, C.**, Lipski, C., Mahlmann, T., Mathiak, B.: Using Genetically Optimized AIs to Improve Gameplaying Fun for Strategical Games. ACM SIGGRAPH Sandbox 2008, Los Angeles, 7–14.

2008 **Salge, C.**, Polani, D.: Information Driven Organization of Visual Receptive Fields. GWAL 2008, Leipzig.

Book chapters

2014 **Salge, C.**, Glackin, C., Polani, D.: Empowerment – An Introduction. In M. Prokopenko (ed.), Guided Self-Organization: Inception, Springer.