

The 7th AISB Symposium on Computational Creativity (CC@AISB2020/21)

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Abstract

The 7th AISB Symposium on Computational Creativity (CC@AISB2020/21) took place online during April 2021. As event organisers, we report on the event, its ongoing history at the AISB and its future.

Introduction

This year's Computational Creativity Symposium at AISB is the seventh such symposium to take place as part of the annual convention of the Society for the Study of Artificial Intelligence and Simulation of Behaviour (AISB 2021) which was held online from 7 – 9 April 2021.

This annual symposium typically features a number of presentations over a single day, covering a range of topics in the field of Computational Creativity. Issues addressed include practical work in the area, theoretical approaches to creativity, and philosophical questions raised on the potential of non-human creative agents.

Held online, the 7th Computational Creativity symposium at AISB (CC@AISB'2020/2021) was originally scheduled for an in-person event in London in April 2020. Due to COVID-19, the event was postponed one year and held online on 9th April 2021, as part of the AISB Convention.¹

Over the last few decades, computational creativity has attracted an increasing number of researchers from arts and science backgrounds, from academia and industry. Philosophers, cognitive psychologists, computer scientists and artists have all contributed to and enriched this field.

This symposium aims at bringing together researchers to discuss recent technical and philosophical developments in the field, and the impact of this research on the future of our relationship with computers and the way we perceive them: at the individual level where we interact with the machines, the social level where we interact with each other via computers, or even with machines interacting with each other.

This year we were delighted to also run a Show-and-Tell demo session as well as the paper presentations, showcasing demonstrations of computational creativity research results as well as more traditional talk presentations.

¹Hence the acronym CC@AISB'2020 refers to the event due to take place in 2020, and the acronym CC@AISB'2020/2021 the rescheduled event that took place April 2021.

This year's event, CC@AISB2020/21, has a web presence at <https://sites.google.com/view/aisb2020cc/>.

A quick history of computational creativity research at AISB

AISB is the Society for the Study of Artificial Intelligence and Simulation of Behaviour. Founded in 1964, it is the world's oldest AI society, the UK's biggest AI society, and a member of European Coordinating Committee for Artificial Intelligence (ECCAI).² Based in the UK with international membership, AISB's annual convention is the longest running convention on Artificial Intelligence. The annual AISB convention consists of various symposia, organised as standalone events within the convention. This year saw the 7th running of the Computational Creativity symposium.

AISB's historical connections to computational creativity research include having Margaret Boden (Boden 1992) as one of its Fellows for many years. Connections to computational creativity research have also arisen recently through AISB's organising of the Loebner Prize (a formalised Turing Test competition). In 2019, after the passing of Loebner Prize sponsor Hugh Loebner, AISB continued the Loebner prize event by incorporating it as a part of an event *AISB X: Creativity Meets Economy* with the theme and an "exhibition of art made by and with computers".³

AISB occupies an important part of the history of computational creativity research, hosting computational creativity research events multiple times in the past 25 years. Creativity was the theme of the entire AISB'99 Convention, which took place in Edinburgh, UK, organised by Geraint Wiggins, Helen Pain and Andrew Patrizio. Since then, Computational Creativity workshops have been held in conjunction with several AISB Conventions:

2000 Creative & Cultural Aspects of AI & Cognitive Science

2001 Symposium on AI and Creativity in Arts and Science

2002 AI and Creativity in Arts and Science

2003 AI and Creativity in Arts and Science

Largely, the team driving these AISB events (and computational creativity workshops at other conferences) were becoming more involved in working towards an integrated in-

²<https://eccai.org>

³[\(https://aisb.org.uk/aisb-events/\)](https://aisb.org.uk/aisb-events/)

ternational research event on computational creativity, leading to the establishment of the annual International Conference on Computational Creativity series in 2010.

Soon a desire grew for additional events in computational creativity to complement ICCC. The current series of Computational Creativity symposia at the AISB Convention started in 2014, and since then, there has been a Computational Creativity symposium at every annual AISB convention. This year's symposium was the 7th such symposium.

The symposium respects AISB's traditional positioning of the convention as a venue that encourages reports of work in progress alongside presentations of more mature research. As the AISB Convention Handbook (AISB Committee 2015) recommends:

“the general principle should be that relevant submissions that represent a decent degree of novelty, are not published elsewhere, are well presented and reasonably rigorous should be accepted.

The AISB wishes accepted submissions to be at a high international standard of quality. However, symposia will often be workshops that air work in progress or exist primarily to stimulate discussion, set new agendas, forge new interdisciplinary links, etc., and an appropriate level of flexibility can be allowed in reviewing.”

Full papers are usually required, though this year we also encouraged shorter submissions of ‘Show-and-Tell’ demo papers, inspired by ICCCs in previous years. Proceedings of each year's workshops are available via <https://aisb.org.uk/convention-proceedings/> and <https://aisb.org.uk/past-conventions/>, and typically receive good citation rates within computational creativity research.

Typically, the symposium hosts a keynote speaker each year. In past years, many key figures in computational creativity research have given CC@AISB keynotes:

CC2014 - keynote given by Geraint Wiggins

CC2015 - keynote given by Tony Veale

CC2016 - keynote given by Margaret Boden

CC2017 - keynote given by Simon Colton

CC2018 - keynote given by Pablo Gervas

CC2019 - keynote given by Jeremy Gow

This year's symposium was organised by Juan Alvarado and Anna Jordanous. Past organisers of the Computational Creativity symposia⁴ have included Mohammad Majid al-Rifaie, Jeremy Gow and Stephen McGregor. Al-Rifaie and McGregor have also been responsible for organising and editing three special issues of *Connection Science* journal in 2019 (vol 31 (1), (Al-Rifaie 2019)), 2017 (vol 29 (4), (al Rifaie and McGregor 2017)) and 2016 (vol 28 (2), (al Rifaie 2016)), featuring developments of computational creativity work published at CC@AISB. Computational Creativity research was also featured as part of the special issue of *Cognitive Computation* vol 4. (2012) (Bishop and Erden 2012) on “Computational Creativity, Intelligence and Autonomy”, arising from an AISB symposium on Philosophy and edited by J. Mark Bishop and Yasemin Erden.

⁴We are maintaining a links page to past symposia at <https://sites.google.com/view/aisb2020cc/history-of-ccaaisb>.

The 2020 symposium (postponed to 2021)

Symposia for AISB are proposed each year to the central convention organisers, and for the 7th year running, a successful Computational Creativity symposium proposal was made. With a program committee of 13 excellent reviewers, we accepted five full paper submissions and three Show and Tell extended abstract submissions for CC@AISB'2020.

Due to take place in London in April 2020, like many 2020 events the AISB Convention was cancelled due to the rising situation with COVID-19. As this was at the start of the pandemic in the UK, it was one of the first events to fall during lockdown. First we lost our keynote speaker François Pachet, who quite rightly felt uncomfortable travelling to the UK. At this point, we still hoped the convention would go ahead, and were grateful to Colin Johnson for accepting our short-notice invitation to give a keynote instead. With participants coming from across the world, though, slowly more participants decided not to travel to London. By April 2020, the UK was in lockdown and AISB'2020 was put on hold.

At this point in time, still early in the pandemic, there was not the knowledge that we have now about running online events. Hence AISB Convention was postponed. With no knowledge of how long the pandemic would be affecting our lives, we believe that at this point many people hoped the AISB Convention (and CC@AISB'2020) could go ahead as planned in London later in the year. Instead, as we know, online conferences became the norm. The AISB took the decision to delay the entire Convention until April 2021. Even then, given the uncertainty over whether we could have in-person events, or even hybrid events, it was only with the imposition of the third UK lockdown that the decision was taken to hold AISB'2020 (by this point, AISB'2020/21) fully online. We were delighted that all our original authors were able to attend, though very sadly due to time constraints in organisation and in the day's scheduling, we were not able to re-invite our keynote speaker François Pachet.⁵

The 2021 (postponed from 2020) symposium

There was much discussion about when the postponed AISB 2020 Convention would take place. Eventually COVID-19 made the decision for convention organisers; the convention was to run fully online in April 2021. With this online format, registration fees were dropped, with all symposia made freely available to AISB members.⁶ At one stage, Alvarado and Jordanous were not sure if it would be possible to run the event in 2021; as well as both trying to keep up with the additional volume of work through online university teaching, Alvarado was in the final stages of writing up his PhD thesis and Jordanous had a large admin role for her department, completing the month before the revised dates for AISB 2020/2021. However, with support from the convention organisers and enthusiastic responses from symposium partic-

⁵We do hope François Pachet can forgive our oversight in the rush of re-organising the 2021 event, and would be delighted to host him in a future year!

⁶Non-AISB members needed to purchase a year's AISB membership to attend, however the monetary cost of AISB membership was considerably cheaper than the normal cost of registration.

ipants, the CC@AISB' 2020/2021 convention went ahead on 9th April 2021, the final day of the convention.

Academic communities have learned a lot in the past year or two about the fatigue involved in participating in online events. Hence the AISB convention was scheduled as three days of sessions 13:00-17:00 UK time, with AISB plenary keynotes scheduled each day at 17:00-18:00. Each hour, we scheduled in a ten minute 'comfort break', to rest the eyes and walk away from our screens before returning for more talks. Each speaker had a slot of 25 minutes.

- *First Experiments in the Automatic Generation of Pseudo-Profound Pseudo-Bullshit Image Titles* (paper) (Colton, Ferrer, and Berns 2021). Colton started the CC2020/21 symposium with an entertaining, provocative talk including the point that 'one person's bullshit is another person's high philosophy'. He reported how International Art English can be usefully employed to generate image titles in the spirit of 'pseudo-profound bullshit statements'. This work contributes towards an app development project for casual creators to enjoy creating abstract images.
- *Role-Based Perceptions of Computer Participants in Human-Computer Co-Creativity* (paper) (Kantosalo and Jordanous 2021). Kantosalo presented a new categorisation of the roles that computers can take in human-computer co-creativity. The work aims to move us away from pre-defined (limiting) roles for a computer from creativity support tool literature to an increase in the amount of creative responsibilities taken on by co-creative computational systems. The endgoal is a wider recognition of what computers can contribute in terms of creative collaborations, taking fluid emergent roles. Some fascinating questions after the presentation probed about if we reach the stage where computers become the creative lead and humans essentially become the creativity support tool (a discussion which spilled onto Twitter⁷, and the implications for computer-computer co-creativity in terms of how we might get computational collaborators to flexibly change roles through interaction.
- *Darwinian Creativity as a Model for Computational Creativity* (paper)(Helliwell 2021). Helliwell presented her work on Darwinian Creativity (Simonton) as a model for computational creativity, asking whether this model could be applied as a tool for evaluation of computational creativity. Helliwell related the Darwinian model of creativity to GANs and CANs (Creative Adversarial Networks), then considered whether Simonton's model could be applied as assessable standards for creativity evaluation.
- *Will the real artist stand up? Computational creativity as mirror to the human soul* (paper) (Parthemore 2021). In this philosophical talk, Parthemore offered and dissected a working prescriptive definition of creativity: "The at least partly - yet never fully! - intentional act of an intentional agent or agents recombining elements of past or present experience in more or less strikingly novel ways to yield insights - from the subtle to the life- or world-altering - or more immediate practical benefit." Parthemore positioned

⁷<https://twitter.com/annajordanous/status/1380505550564290564>

Alan Turing as one of the pioneers of computational creativity, emphasising the links between creativity and intelligence, which sparked some discussion on Twitter⁸. A particularly lively discussion followed this talk!

- *Assessing Creativity of MEXICA: An Application of Ritchie's Criteria* (paper) (Alvarado and Wiggins 2021). Alvarado discussed using Ritchie's criteria (Ritchie 2007) to revisit and assess the creativity of Perez y Perez's MEXICA (Pérez y Pérez and Sharples 2001). Ritchie's criteria have long been controversial as a measure of computational creativity systems. Alvarado demonstrated how they give us some valuable insights about typicality and value of system outputs; this paper uses them to allow MEXICA to test itself, to explore its conceptual space to optimise its performance.
- *Walk the Line: Digital Storytelling as Embodied Spatial Performance* (Show-and-Tell demo) (Wicke and Veale 2021). Wicke presented the first of our Show and Tell demos on embodied digital storytelling - sadly with robots sending their apologies due to COVID-19. Instead Wicke talked us through some videos on how spatial schemas can be used in gestures to enhance cross-modal communication during story-telling.
- *AMI – Creating Musical Compositions with a Coherent Long-term Structure* (Show-and-Tell demo) (Ma, Brown, and Vecchiotti 2021). Moving from stories to music in our Show and Tell demos - Ning Ma presents the AMI system for creating music using AI at CC2020/21. Ma presented AMI – Artificial Music Intelligence, a deep neural network that can generate musical compositions of different instruments with a coherent long-term structure. AMI uses a general-purpose deep neural network architecture. It predicts a music note with an autoregressive model depending on the last note and a long sequence of notes. They enhance the learning of musical structures by adding different kinds of embeddings: one short-term embedding and one long-term embedding. As a result, the model can maintain a coherent long-term structure and occasionally pick up different movements⁹
- *Jazzy Beach Critters: a Demonstration of Real-Time Music Generation with Application to Games* (Show-and-Tell demo) (Quick and Burrows 2021). Our final CC2020/21 demo talk came from Donya Quick's work on on-the-fly game generation - Jazzy Beach Critters¹⁰. They provided a proof-of-concept implementation to create an interactive scene where the music changes as the user interacts with creatures in the environment. This is a proposal for the generation of music in video games using procedural methods. They use improvisation models in real-time intending to generate variations in the music in response to the events triggered by the user in a way that the transition between music and moods of characters in the scene happens without abrupt changes.

⁸<https://twitter.com/annajordanous/status/1380517501998600198>

⁹Audio examples at: <https://meddis.dcs.shef.ac.uk/melody/samples>

¹⁰Online demo: <http://donyaquick.com/jazzy-beach-critters/>

Overall, the day's talks and demos gave us a wide-ranging and thoroughly enjoyable tour of computational creativity technical experiments, demos, theories, frameworks and philosophy research findings, across domains ranging from music to robotic storytelling. It was a fascinating, thought-provoking day, with much to explore and learn from.

After the computational creativity symposium talks, many of us headed to the main AISB online channel for an excellent plenary talk for that day, given by Dr Sabine Hauert from University of Bristol, titled "Swarms for people".

Moving forwards

Proceedings are published on the AISB 2021 website (Alvarado and Jordanous 2021). Videos of the talks are also available to AISB members, through the Members Area of AISB's website. We are considering the publication of a selection of extended and re-reviewed papers from the symposium in a journal special issue.

We hope that the 8th AISB Symposium on Computational Creativity will run in 2022. AISB Convention organisers typically issue calls for symposium proposals to be submitted by around September of the year before the convention runs, and both current organisers are keen to see that a proposal is submitted for the Computational Creativity symposium. Alvarado and Jordanous welcome offers of assistance in proposing and (if successful) running the symposium in future years, or joining our excellent program committee.

We hope to continue the Show-And-Tell demos sessions, which we feel enabled new types of submissions and which opened the symposium up to new authors who might not have submitted to CC@AISB in the past.

Two areas we hope to improve in the future are the diversity in keynote speakers and financial support for the symposium through sponsorship.

- Diversity in keynote speakers: While we dearly hope that we can host our intended keynote speaker, François Pachet, in the near future, we also note that the majority of past keynote speakers have been white male speakers (all except Margaret Boden in 2016). Computational creativity is growing in diversity and we are keen to encourage this and make sure our range of keynote speakers better represents - and inspires - such diversity. We also hope to involve more industry speakers (such as Pachet), leading us onto the next improvement we wish to focus on:
- Sponsorship: An area that we would also like to improve is links with industry/non-academic organisation partners. The symposium receives limited financial support from the Convention, typically one free registration per symposium (and of course all in-person hosting costs and logistical arrangements covered!) Hence we are looking to secure sponsorship to cover expenses of inviting keynote speakers, to offer prizes for best papers, and in an ideal world, to offer some financial support to participants who might not otherwise be able to attend.

Looking towards the future of CC@AISB: at the time of writing, we do not know whether future AISB conventions will be held online, in-person, or with some hybrid arrangements. What we do know, though, is that computational cre-

ativity and AISB have a rich set of historical connections that we are proud to have played our part in continuing to 2021. Long may it continue!

References

- [AISB Committee 2015] AISB Committee., ed. 2015. *AISB Convention Organisers' Handbook*. UK: AISB.
- [al Rifaie and McGregor 2017] al Rifaie, M. M., and McGregor, S. 2017. Editorial. *Connection Science* 29(4):265–267.
- [al Rifaie 2016] al Rifaie, M. M. 2016. Editorial. *Connection Science* 28(2):109–110.
- [Al-Rifaie 2019] Al-Rifaie, M. M. 2019. Editorial. *Connection Science* 31(1):1–3.
- [Alvarado and Jordanous 2021] Alvarado, J., and Jordanous, A., eds. 2021. *Proceedings of the 7th Computational Creativity Symposium at AISB 2021 (CC2021)*. AISB. <https://aisb.org.uk/wp-content/uploads/2021/04/cc.aisb.proc.pdf>.
- [Alvarado and Wiggins 2021] Alvarado, J., and Wiggins, G. 2021. Assessing creativity of MEXICA: An application of Ritchie's criteria. In *Procs. 7th AISB Symposium on Computational Creativity (CC@AISB2020/21)*.
- [Bishop and Erden 2012] Bishop, J. M., and Erden, Y. 2012. Computational creativity, intelligence and autonomy. *Cognitive Computation* 4:209–211.
- [Boden 1992] Boden, M. 1992. *The Creative Mind*. London: Abacus.
- [Colton, Ferrer, and Berns 2021] Colton, S.; Ferrer, B. P.; and Berns, S. 2021. First experiments in the automatic generation of pseudo-profound pseudo-bullshit image titles. In *Procs. 7th AISB Symposium on Computational Creativity (CC@AISB2020/21)*.
- [Helliwell 2021] Helliwell, A. 2021. Darwinian creativity as a model for computational creativity. In *Procs. 7th AISB Symposium on Computational Creativity (CC@AISB2020/21)*.
- [Kantosalo and Jordanous 2021] Kantosalo, A., and Jordanous, A. 2021. Role-based perceptions of computer participants in human-computer co-creativity. In *Procs. 7th AISB Symposium on Computational Creativity (CC@AISB2020/21)*.
- [Ma, Brown, and Vecchiotti 2021] Ma, N.; Brown, G.; and Vecchiotti, P. 2021. AMI – creating musical compositions with a coherent long-term structure. In *Procs. 7th AISB Symposium on Computational Creativity (CC@AISB2020/21)*.
- [Parthemore 2021] Parthemore, J. 2021. Will the real artist stand up? Computational creativity as mirror to the human soul. In *Procs. 7th AISB Symposium on Computational Creativity (CC@AISB2020/21)*.
- [Pérez y Pérez and Sharples 2001] Pérez y Pérez, R., and Sharples, M. 2001. Mexica: A computer model of a cognitive account of creative writing. *Journal of Experimental and Theoretical Artificial Intelligence* 13(2):119–139.
- [Quick and Burrows 2021] Quick, D., and Burrows, C. N. 2021. Jazzy beach critters: a demonstration of real-time music generation with application to games. In *Procs. 7th AISB Symposium on Computational Creativity (CC@AISB2020/21)*.
- [Ritchie 2007] Ritchie, G. 2007. Some empirical criteria for attributing creativity to a computer program. *Minds and Machines* 17:76–99.
- [Wicke and Veale 2021] Wicke, P., and Veale, T. 2021. Walk the line: Digital storytelling as embodied spatial performance. In *Procs. 7th AISB Symposium on Computational Creativity (CC@AISB2020/21)*.