# Cameron Browne
Associate Professor

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• Australian/UK research scientist specialising in the application of AI in creative domains.
• PhD work on evolutionary game design produced the first published computer-generated games.
• Designer of the Ludii general game system as part of my ERC-funded *Digital Ludeme Project*.

## Education

**2009** **PhD in Artificial Intelligence**, Queensland University of Technology, Brisbane, Australia
Thesis: *Automatic Generation and Evaluation of Recombination Games*
Dean's Award for Outstanding Thesis

**1993** **Computer Science (Honours)**, La Trobe University, Melbourne, Australia
Thesis: *Graphical User Interface for a Multiple Robot Simulation*
1st class Honours, ranked #1 student for 1993 (thesis awarded 96%)

**1992** **Bachelor of Arts**, University of Queensland, Brisbane, Australia
Major in Computer Science

**1990** **Bachelor of Science**, University of Queensland, Brisbane, Australia
Major in Psychology

## Work

**2018–** **Associate Professor,** Department of Advanced Computing Sciences (DACS)
Maastricht University, Maastricht, Netherlands
Principal Investigator of the ERC-funded *Digital Ludeme Project*

**2017–18** **Research Scientist**, RIKEN Institute, Advanced Intelligence Project (AIP), Tokyo, Japan
Project: *Strategic Features for General Games*

**2014–17** **Vice-Chancellor's Senior Research Fellow**, QUT, Brisbane, Australia
Project: *Games Without Frontiers*

**2013–14** **Research Fellow**, Goldsmiths College, London, UK
Project: *UCT for Games and Beyond*

**2010–13** **Research Fellow**, Computational Creativity Group, Imperial College London, UK
Project: *UCT for Games and Beyond*

**2010** **Research Assistant**, AI & Games Network, Imperial College London, UK
Network Coordinator

**2009** **Research Associate**, Imperial College London and University of Edinburgh, UK
Project: *Automated Modelling for Casual Game Design*

**2003–08** **Developer**, Swish, Sydney, Australia
Product: *SwishMax* (the world's second most popular Flash editor)

**2000–03** **Senior Software Engineer**, Canon Research Australia (CiSRA), Sydney, Australia
Project: *Animated Glorious Fonts*

**1998–99** **Software Engineer,** Microsoft, Seattle, USA
Product: *Windows 2000* (GDI+ fonts for the Windows NT Team)

| 1997–98 | **Software Engineer,** Canon Research Australia (CiSRA), Sydney, Australia |
| | Project: *Glorious Fonts* (computational geometry for automated font decoration) |
| 1996 | **Visiting Researcher**, International Computer Science Institute (ICSI), Berkeley, USA |
| | Project: *Automated Celtic Knotwork* |

## Grants

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|---|---|
| 2023–27 | **European Cooperation in Science and Technology (COST) Action (€600k)** |
| | Maastricht University, Maastricht, Netherlands (Co-Proposer) |
| | Project: *Computational Techniques for Tabletop Games Heritage* (GameTable – CA22145) |
| 2018–23 | **European Research Council (ERC) Consolidator Grant (€2m)** |
| | Maastricht University, Maastricht, Netherlands (Principal Investigator) |
| | Project: *Digital Ludeme Project* (ERC CoG #771292 – LUDEME) |
| 2014–17 | **Vice-Chancellor's Senior Research Fellow (3 year position)** |
| | Queensland University of Technology, Brisbane, Australia (Principal Investigator) |
| | Project: *Games Without Frontiers* |
| 2010–14 | **Engineering and Physical Sciences Research Council (EPSRC) Grant (£1.5m)** |
| | Imperial College London and Goldsmiths College, London, UK (Co-Proposer) |
| | Project: *UCT for Games and Beyond* (EP/I001964) |
| 2009 | **Technology Strategy Board (TSB) Grant (£15k)** |
| | Imperial College London, UK (Proposer) |
| | Project: *Board Game Generation for the iPhone* (AK318J) |
| 2009 | **Flexibility Funding (£12k)** |
| | University of Edinburgh, Edinburgh, UK (Proposer) |
| | Project: *Automated Mathematical Modelling for Casual Game Design* |

## Awards

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| 2023 | **European Research Council (ERC) Proof of Concept "Seal of Excellence"** |
| | For proposal *Realising the Potential of the Ludii General Game System.* |
| 2012 | **GECCO "Humies" Award,** *Genetic and Evolutionary Computation Conference (GECCO 2012)*, USA |
| | Gold medal for human-competitive results in evolutionary computation. |
| 2010 | **Game of the Year (New Zealand)** |
| | For board game *Palago.* |
| 2009 | **Dean's Award for Outstanding Thesis** |
| | PhD Thesis, Queensland University of Technology, Brisbane, Australia. |
| 2005 | **Australian Postgraduate Award (APA)** |
| | For PhD studies, Queensland University of Technology, Brisbane, Australia. |
| 1998 | **Inventor of the Year (1998)** |
| | Canon Research Australia (CiSRA), Sydney, Australia. |

## Patents

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| 1997–2003 | **39 granted software patents** for Canon Research Australia (CiSRA), Sydney, Australia. |
| | Patents granted in Australia, USA and Europe. |
| | First or single author of most applications. |
| | Canon Research Australia's "Inventor of the Year" for 1998. |

# Works in Progress

**2023**  W. Crist, É. Piette, K. Jeneson, D. J. N. J. Soemers, M. Stephenson, L. van Goor and **C. Browne**, "Ludus Coriovalli: Using Artificial Intelligence to Identify an Ancient Board Game", *Science*, journal article, 2023. (in preparation)

**C. Browne**, É. Piette, M. Stephenson and D. J. N. J. Soemers, "The Ludii General Game System", *Journal of Artificial Intelligence Research (JAIR)*, journal article, 2023. (in preparation)

W. Crist, É. Piette, D. J. N. J. Soemers, M. Stephenson and **C. Browne**, "Computational Approaches for Recognising and Reconstructing Ancient Games: The Case of Ludus Latrunculorum", chapter in V. Dasen, A. Pace, T. Penn and U. Schädler (eds), *The Archaeology of Play and Games: Material Approaches*, Oxbow Books, Oxford, 2023. (forthcoming)

W. Crist and **C. Browne**, "Transmission of Games in the Ancient Eastern Mediterranean and Aegean", chapter in V. Dasen and M. Vespa (eds), *Play and Games in Graeco-Roman Antiquity*, University of Liege Press, Liege, 20213. (forthcoming)

# Books

**2022**  **C. Browne**, A. Kishimoto and J. Schaeffer (eds), *Proceedings of Computers and Games (CG 2022)*, LNCS 13865, Springer, Berlin, 2022.

**2021**  **C. Browne**, A. Kishimoto and J. Schaeffer (eds), *Proceedings of Advances in Computer Games (ACG 2021)*, LNCS 13262, Springer, Berlin, 2021.

**2018**  **C. Browne** (ed.), *Game & Puzzle Design Compendium*, Lulu, PoD, 2018.

**C. Browne**, M. Winands, M. Preuss and J. Liu (eds), *Proceedings of the 2018 Conference on Computational Intelligence and Games (CIG'18)*, IEEE Press, Maastricht, 2018.

**2012**  **C. Browne**, *Margo Basics*, Lulu, PoD, 2012.

**C. Browne** and N. Romeral Andrés, *Shibumi Rule Book*, Lulu, PoD, 2012.

**2011**  **C. Browne**, *Evolutionary Game Design*, Springer, Berlin, 2011.
Gold medal, **GECCO "Humies" Award** for human-competitive results in evolutionary computing.

**2005**  **C. Browne**, *Connection Games: Variations on a Theme*, AK Peters, Massachusetts, 2005.

**2000**  **C. Browne**, *Hex Strategy: Making The Right Connections*, AK Peters, Massachusetts, 2000.

# Book Chapters

**2023**  **C. Browne**, É. Piette, M. Stephenson and D. J. N. J. Soemers, "Ludii General Game System", in N. Lee (ed.), *Encyclopedia of Computer Graphics and Games (ECGG)*, Springer, Berlin, 2023.

**2014**  M. Nelson, J. Togelius, **C. Browne** and M. Cook, "Rules and Mechanics", in N. Shaker, J. Togelius and M. J. Nelson (eds), *Procedural Content Generation in Games: A Textbook and an Overview of Current Research*, Springer, Berlin, pp. 97–117, 2014.

**C. Browne**, S. Colton, M. Cook, J. Gow and R. Baumgarten, "Towards the Adaptive Generation of Bespoke Game Content", in H. Agius and M. Angelides (eds), *The IEEE Handbok of Digital Games*, IEEE Press, pp. 17–64, 2014.

**2013**  **C. Browne**, "Metrics for Better Puzzles", in M. S. El-Nasr, A. Drachen, A. Canossa and K. Isbister (eds), *Game Analytics: Maximizing the Value of Player Data*, Springer, Berlin, pp. 769–800, 2013.

# Peer-Reviewed Papers

**2023**    **C. Browne**, "Tutte Embedding for Drawing Knots", *Proceedings of Bridges 2023: Mathematics, Art, Music, Architecture, Culture*, Halifax, Canada, 2023.

D. J. N. J. Soemers, É. Piette, M. Stephenson and **C. Browne**, "Spatial State-Action Features for General Games", *Artificial Intelligence*, 321, pp. 1–32, 2023.

**C. Browne**, M. Stephenson and W. Crist, "Data Note: The Digital Ludeme Project", *Open Science Europe*, 2023. https://open-research-europe.ec.europa.eu/articles/3-164/v1

**2022**    **C. Browne**, "Nice Knots", *Proceedings of Bridges 2022: Mathematics, Art, Music, Architecture, Culture*, Aalto, Finland, pp. 309–312, 2022.

**C. Browne**, É. Piette, W. Crist, M. Stephenson and D. J. N. J. Soemers, "Report on the 2nd Digital Ludeme Project Workshop", *ICGA Journal*, 44:2, pp. 56–66, 2022.

**C. Browne**, A. Kishimoto and J. Schaeffer, "ACG 2021 Conference Report", *ICGA Journal*, 44:1, pp. 39–42, 2022.

E. Doe, M. H. M. Winands, D. J. N. J. Soemers and **C. Browne**, "Combining MCTS with Proof-Number Search", *IEEE Conference on Games (CoG 2022)*, Beijing, pp. 206–212, 2022.

**2021**    D.J.N.J. Soemers, V. Mella, **C. Browne** and O. Teytaud (2021) "Deep Learning for General Game Playing with Ludii and Polygames", *ICGA Journal*, 43:3, pp. 146–161, 2021.

M. Stephenson, É. Piette, D. J. N. J. Soemers, and **C. Browne**, "Automatic Generation of Board Game Manuals", *Advances in Computer Games (ACG 2021)*, Maastricht, Springer, LNCS 13262, pp. 211–222, 2021.

D. J. N. J. Soemers, É. Piette, M. Stephenson and **C. Browne**, "Optimised Playout Implementations for the Ludii General Game System", *Advances in Computer Games (ACG 2021)*, Maastricht, Springer, LNCS 13262, pp. 223–234, 2021.

**C. Browne**, É. Piette, M. Stephenson and D. J. N. J. Soemers, "General Board Geometry", *Advances in Computer Games (ACG 2021)*, Maastricht, Springer, LNCS 13262, pp. 235–246, 2021.

É. Piette, M. Stephenson, D. J. N. J. Soemers and **C. Browne**, "General Board Game Concepts", *IEEE Conference on Games (CoG 2021)*, Copenhagen, IEEE Press, pp. 932–939, 2021.

M. Stephenson, D. J. N. J. Soemers, É. Piette and **C. Browne**, "General Game Heuristic Prediction Based on Ludeme Descriptions", *IEEE Conference on Games (CoG 2021)*, Copenhagen, IEEE Press, pp. 878–881, 2021.

**C. Browne**, "Everything's a Ludeme… Well, Almost Everything", *Board Game Studies Colloquium (BGS 2020/21)*, Paris, HAL Open Science (hal-03737317), pp. 1–18, 2021.

**C. Browne** and F. Barbero, "Heuristic Sampling for Fast Plausible Playouts", *IEEE Conference on Games (CoG)*, Copenhagen, IEEE Press, pp. 17–20, 2021.

**2020**    **C. Browne**, "AI for Ancient Games", *Künstliche Intelligenz*, Springer, 34:1, pp. 89–93, 2020.

D. J. N. J. Soemers, É. Piette, M. Stephenson and **C. Browne**, "Manipulating the Distributions of Experience used for Self-Play Learning in Expert Iteration", *IEEE Conference on Games (COG 2020)*, Osaka, IEEE Press, pp. 245–252, 2020.

J. West, F. Maire, **C. Browne** and S. Denman, "Improved Reinforcement Learning with Curriculum", *Expert Systems with Applications*, 158, pp. 1–15, 2020.

É. Piette, D. J. N. J. Soemers, M. Stephenson, C. F. Sironi, M. H. M. Winands and **C. Browne,** "Ludii – The Ludemic General Game System", *24th European Conference on Artificial Intelligence (ECAI 2020)*, Santiago de Compostela, IOS Press, pp. 411–418, 2020.

**2019**    **C. Browne**, D. J. N. J. Soemers, É. Piette, M. Stephenson, M. Conrad, W. Crist, T. Depaulis, E. Duggan, F. Horn, S. Kelk, S. M. Lucas, J. P. Neto, D. Parlett, A. Saffidine, U. Schädler, J. N. Silva, A. de Voogt and M. H. M. Winands, *Foundations of Digital Archaeoludology*, Report on Schloss Dagstuhl Research Meeting 19153, Leibniz Center for Informatics, Germany, *arXiv*, pp. 1–26, 2019.

**C. Browne,** M. Stephenson, É. Piette and D. J. N. J. Soemers, "A Practical Introduction to the Ludii General Game System", *Advances in Computer Games (ACG 2019)*, Macao, Springer, LNCS 12516, pp. 167–179, 2019.

**C. Browne**, D. J. N. J. Soemers and É. Piette, "Strategic Features for General Games", *Proceedings of the 2$^{nd}$ AAAI Workshop on Knowledge Extraction from Games (KEG 2019)*, Honolulu, AAAI Press, pp. 70–75, 2019.

**C. Browne**, A. Liapis and M. H. M. Winands, "Special Issue on Computer Aided Game and Puzzle Design", *ICGA Journal*, 41:1, pp. 62–63, 2019.

D. J. N. J. Soemers, W. Crist and **C. Browne**, "Report on the Digital Ludeme Project", *ICGA Journal*, 41:3, pp. 138–142, 2019.

D. J. N. J. Soemers, É. Piette and **C. Browne**, "Biasing MCTS with Features for General Games", *IEEE Congress on Evolutionary Computation (CEC 2019)*, Wellington, IEEE Press, pp. 442–449, 2019.

L. V. Hufkens and **C. Browne**, "A Functional Taxonomy of Logic Puzzles", *IEEE Conference on Games (CoG 2019)*, London, IEEE Press, pp. 1–4, 2019.

M. Stephenson, É. Piette, D. J. N. J. Soemers and **C. Browne**, "Ludii as a Competition Platform", *IEEE Conference on Games (CoG 2019)*, London, IEEE Press, pp. 634–641, 2019.

É. Piette, M. Stephenson, D. J. N. J. Soemers and **C. Browne**, "An Empirical Evaluation of Two General Game Systems: Ludii and RBG", *IEEE Conference on Games (CoG 2019)*, London, IEEE Press, pp. 626–629, 2019.

M. Stephenson, É. Piette, D. J. N. J. Soemers and **C. Browne**, "An Overview of the Ludii General Game System", *IEEE Conference on Games (CoG 2019)*, London, IEEE Press, pp. 864–865, 2019.

C. Piette, É. Piette, M. Stephenson, D. J. N. J. Soemers and **C. Browne**, "Ludii and XCSP: Playing and Solving Logic Puzzles", *IEEE Conference on Games (CoG 2019)*, London, IEEE Press, pp. 630–633, 2019.

D. J. N. J. Soemers, É. Piette, M. Stephenson and **C. Browne**, "Learning Policies from Self-Play with Policy Gradients and MCTS Value Estimates", *IEEE Conference on Games (CoG 2019)*, London, IEEE Press, pp. 329–326, 2019. **(runner-up for Best Paper)**

**2018**    **C. Browne**, "Modern Techniques for Ancient Games", *IEEE Conference on Computational Intelligence in Games (CIG 2018)*, Maastricht, IEEE Press, pp. 490–497, 2018. **(runner-up for Best Paper)**

**C. Browne**, "Computer-Assisted Puzzle Design", *ICGA Journal*, 20:4, pp. 375–386, 2018.

**C. Browne**, T. W. Neller and J.-C. Chen, "Computers and Games 2018", *ICGA Journal*, 40:3, pp. 177–181, 2018.

**2017**    **C. Browne**, "Some Observations on Automated Strategy Game Design", in *Artificial and Computational Intelligence in Games: AI-Driven Game Design*, Report from Schloss Dagstuhl Seminar 17471, Leibniz Center for Informatics, Wadern, Germany, pp. 91–92, 2017.

**C. Browne,** "Editorial: Back to Basics", *Game & Puzzle Design*, 3:2, pp. 3–4, 2017.

R. Ishii and **C. Browne**, "DistHex: A New Twist on Hex", *Game & Puzzle Design*, 3:2, pp. 10–14, 2017.

**C. Browne**, "Ludoku: A Game Design Experiment", *Game & Puzzle Design*, 3:2, pp. 35–46, 2017.

**C. Browne**, "Tension in Puzzles", *Game & Puzzle Design*, 3:2, pp. 71–78, 2017.

**C. Browne**, "Solving Fred Horn's `Gloop' Puzzle", *ICGA Journal*, 39:1, pp. 1–19, 2017.

**C. Browne**, "Analysis of Fred Horn's 'Gloop' Puzzle", *Advances in Computer Games (ACG 2017)*, Leiden, Springer, LNCS 10664, pp. 26–37, 2017.

**C. Browne**, "Editorial: Talking About Other People's Games", *Game & Puzzle Design*, 3:1, pp. 3–4, 2017.

**C. Browne**, "Limping Boards for Games", *Game & Puzzle Design*, 3:1, pp. 17–24, 2017.

**C. Browne**, "Back to the Past: Ancient Games as a New AI Frontier", *Proceedings of the AAAI 2017 Workshop on What's Next for AI in Games?*, San Francisco, AAAI Press, pp. 1–2, 2017.

**C. Browne**, "Reinvent the Wheel", *Game & Puzzle Design*, 3:1, pp. 51–62, 2017.

2016 **C. Browne**, "A Class Grammar for General Games", *Computers and Games (CG 2016),* Leiden, Springer, LNCS 10068, pp. 167–182, 2016.

**C. Browne**, "Make the Design do the Work", *Game & Puzzle Design*, 2:2, pp. 27–40, 2016.

**C. Browne**, "A Game Design Approach to a Real World Problem", *Game & Puzzle Design*, 2:2, pp. 76–80, 2016.

**C. Browne**, "Editorial: Nothing New Under the Sun", *Game & Puzzle Design*, 2:2, pp. 3–4, 2016.

N. Romeral Andrés and **C. Browne**, "Eco-Friendly Game Design", *Game & Puzzle Design*, 2:1, pp. 19–27, 2016.

**C. Browne**, "Editorial: Game Design in the Age of AI", *Game & Puzzle Design*, 2:1, pp. 3–4, 2016.

**C. Browne**, "Algorithms for Interactive Sprouts", *Theoretical Computer Science*, Special Issue on Computer Games, 644:C, pp. 29–42, 2016.

**C. Browne**, "Bug or Feature?", *Game & Puzzle Design*, 2:1, pp. 61–69, 2016.

2015 **C. Browne** and F. Maire, "Monte Carlo Analysis of a Puzzle Game", *28th Australasian Joint Conference on Artificial Intelligence (AI 2015)*, Canberra, Springer, LNAI 9457, pp. 83–95, 2015.

**C. Browne**, "Editorial: Mixing and Fixing Games", *Game & Puzzle Design*, 1:2, pp. 3–4, 2015.

**C. Browne**, "Try: A Hybrid Puzzle/Game", *Game & Puzzle Design*, 1:2, pp. 21–27, 2015.

**C. Browne**, "Coalition Control Through Forced Betrayal", *Game & Puzzle Design*, 1:2, pp. 50–52, 2015.

**C. Browne**, "Explore the Design Space", *Game & Puzzle Design*, 1:2, pp. 71–83, 2015.

**C. Browne**, "Boundary Matching for Interactive Sprouts", *Advances in Computer Games (ACG 2015)*, Leiden, Springer, LNCS 9525, pp. 147–159, 2015.

**C. Browne,** "Editorial: Welcome to Game & Puzzle Design", *Game & Puzzle Design*, 1:1, pp. 3–4, 2015.

**C. Browne**, "The Nature of Puzzles", *Game & Puzzle Design*, 1:1, pp. 23–34, 2015.

**C. Browne**, "Uniqueness in Logic Puzzles", *Game & Puzzle Design*, 1:1, pp. 35–37, 2015.

**C. Browne**, "Embed the Rules", *Game & Puzzle Design*, 1:1, pp. 60–70, 2015.

2014 **C. Browne**, J. Togelius and N. Sturtevant, "Guest Editorial: General Games", *IEEE Transactions on Computational Intelligence and AI in Games (T-CIAIG)*, 6:4, pp. 1–3, 2014.

**C. Browne**, "What Can Game AI Teach Us?", *ICGA Journal*, 37:3, pp. 171–175, 2014.

**C. Browne**, "Bitboard Methods for Games", *ICGA Journal*, 37:2, pp. 67–84, 2014.

**C. Browne**, "Evolutionary Game Design: Automated Game Design Comes of Age", *SIGEVOlution Newsletter*, 6:2, pp. 3–16, 2014. **(cover story)**

2013 **C. Browne**, "A Problem Case for UCT", *IEEE Transactions on Computational Intelligence and AI in Games (T-CIAIG)*, 5:1, pp. 69–74, 2013.

**C. Browne**, "UCT for PCG", *IEEE Conference on Computational Intelligence in Games (CIG 2013)*, Niagara Falls, IEEE Press, pp. 137–144, 2013.

**C. Browne**, "Deductive Search for Logic Puzzles", *IEEE Conference on Computational Intelligence in Games (CIG 2013)*, Niagara Falls, IEEE Press, pp. 359–366, 2013.

**2012**   **C. Browne**, E. Powley, D. Whitehouse, S. Lucas, P. I. Cowling, P. Rohlfshagen, S. Tavener, D. Perez, S. Samothrakis and S. Colton, "A Survey of Monte Carlo Tree Search Methods", *IEEE Transactions on Computational Intelligence and AI in Games (T-CIAIG)*, 4:1, pp. 1–43, 2012. **(3,300+ citations)**

**C. Browne** and S. Colton, "Computational Creativity in a Closed Game System", *IEEE Conference on Computational Intelligence in Games (CIG 2012)*, Granada, IEEE Press, pp. 296–303, 2012.

**C. Browne**, G. Yannakakis and S. Colton, "Guest Editorial: Computational Aesthetics and Games", *IEEE Transactions on Computational Intelligence and AI in Games (T-CIAIG),* 4:3, pp. 1–2, 2012.

**C. Browne**, "Elegance in Game Design", *IEEE Transactions on Computational Intelligence and AI in Games (T-CIAIG)*, 4:3, pp. 229–240, 2012.

**C. Browne**, "Yavalath", *ICGA Journal*, 35:1, pp. 20–27, 2012.

**C. Browne**, "Go Without Ko on Hexagonal Grids", *ICGA Journal*, 35:1, pp. 37–40, 2012.

**C. Browne** and S. Tavener, "Bitwise-Parallel Reduction for Connection Tests", *IEEE Transactions on Computational Intelligence and AI in Games (T-CIAIG)*, 4:2, pp. 112–119, 2012.

**C. Browne** and S. Tavener, "Life in the Fast Lane", *AI Factory Newsletter,* Winter, Issue 2, 2012.

**C. Browne**, "Ludi wins 9th Annual 'Humies' Award", *ICGA Journal*, 35:4, pp. 251–252, 2012.

**2011**   J. Togelius, G. Yannakakis, K. Stanley and **C. Browne**, "Search-based Procedural Content Generation: A Taxonomy and Survey", *IEEE Transactions on Computational Intelligence and AI in Games (T-CIAIG)*, 3:3, pp. 172–186, 2011. **(800+ citations)**

**C. Browne**, "On the Dangers of Random Playouts", *ICGA Journal*, 34:1, pp. 25–26, 2011.

**C. Browne**, "Towards MCTS for Creative Domains", *2nd International Conference on Computational Creativity (ICCC-11)*, Mexico City, pp. 96–101, 2011. (online)

**2010**   **C. Browne** and F. Maire, "Evolutionary Game Design", *IEEE Transactions on Computational Intelligence and AI in Games (T-CIAIG)*, 2:1, pp. 1–16, 2011. **(350+ citations)**

J. Togelius, G. Yannakakis, K. Stanley and **C. Browne**, "Search-Based Procedural Content Generation", *EvoApplications*, Torino, Springer, LNCS 2024, pp. 141–150, 2011.

A. Martin, A. Lim, S. Colton and **C. Browne**, "Evolving 3D Buildings for the Prototype Video Game Subversion", *EvoGames*, Torino, Springer, LNCS 2024, pp. 111–120, 2011.

**2009**   S. Colton and **C. Browne**, "Evolving Simple Art-based Games", *EvoGames*, Tübingen, Springer, LNCS 5485, pp. 283–292, 2009.

**2008**   **C. Browne**, "Duotone Truchet-like Tilings", *Mathematics and the Arts*, 2:4, pp. 189–196, 2008.

**C. Browne**, "Truchet Curves and Surfaces", *Computers & Graphics*, 32:2, pp. 268–281, 2008.

**C. Browne**, "Gaudi's Organic Geometry", *Computers & Graphics*, 32:1, pp. 105–115, 2008.

**C. Browne**, "Artistic Box Trees", *Fractals*, 15:3, pp. 249–253, 2008.

**2007**   **C. Browne**, "Efficient Trees: Greed is Good", *Computers & Graphics*, 31:4, pp. 610–616, 2007.

**C. Browne**, "Impossible Fractals", *Computers & Graphics*, 31:4, pp. 659–667, 2007.

**C. Browne**, "Harmonograms", *Computers & Graphics*, 31:2, pp. 292–300, 2007.

**C. Browne**, "Taiji variations: Yin and Yang in multiple dimensions", *Computers & Graphics*, 31:1, pp. 142–146, 2007.

**2006**   **C. Browne**, "Wild Knots", *Computers & Graphics*, 30:6, pp. 1027–1032, 2006.

**C. Browne** and P. Wamelen, "Spiral Packing", *Computers & Graphics*, 30:5, pp. 834–842, 2006.

**C. Browne**, "Fractal Board Games", *Computers & Graphics*, 30:1, pp. 126–133, 2006.

**2005**   **C. Browne**, "Cantor Knots", *Computers & Graphics*, 29:6, pp. 998–1003, 2005.

**C. Browne**, "Rep-Tiles with Woven Horns", *Computers & Graphics*, 29:4, pp. 625–629, 2005.

2003    **C. Browne**, "Akron: Connections in a Higher Dimension", *Abstract Games Magazine*, 14, pp. 11–13, 2003.

2002    **C. Browne**, "Hex Strategy 5: Opening Theory", *Abstract Games Magazine*, 10, pp. 25–28, 2002.

**C. Browne**, "Rep-tiles with Woven Horns", *M/C: A Journal of Media and Culture*, 5:4, 2002 .

2001    **C. Browne**, "Hex Strategy 4: Computer Hex", *Abstract Games Magazine*, 8, pp. 17–20, 2001.

**C. Browne** and João Neto, "Gonnect: The Best of Go and Hex", *Abstract Games Magazine*, 6, pp. 17–21, 2001.

2000    **C. Browne**, "Hex Strategy 3: Ladders", *Abstract Games Magazine*, 4, pp. 13–16, 2000.

**C. Browne**, "Hex Strategy 2: Board Analysis", *Abstract Games Magazine*, 3, pp. 6–9, 2000.

**C. Browne**, "Hex Strategy 1: Introduction and Basic Strategy", *Abstract Games Magazine*, 2, pp. 13–16, 2000.

1998    **C. Browne**, "Font Decoration by Automatic Mesh Fitting", *Raster Imaging and Digital Typography (RIDT'98)*, St Malo, Springer, pp. 23–43, 1998.

1996    **C. Browne**, J. Hogan, and J. Hynd, "Prediction of Student Performance Using Neurocomputing Techniques", *1st Australasian Conference on Computer Science Education*, ACM, pp. 57–72, 1996.


## Unpublished Conference and Workshop Presentations

2022    **C. Browne**, "Digitally Reconstructing Ancient Games", *Board Game Studies Colloquium (BGS 2022)*, Leeuwarden, 2022.

M. Stephenson, W. Crist and **C. Browne**, "Measuring Network Distances between Games", *Board Game Studies Colloquium (BGS 2022)*, Leeuwarden, 2022.

W. Crist, É. Piette, M. Stephenson and **C. Browne**, "Ludus Coriovalli: Archaeological and computational Methods for Examining a Potential Game from Roman Limburg", *Board Game Studies Colloquium (BGS 2022)*, Leeuwarden, 2022.

2021    É. Piette, L. Rougetet, W. Crist, M. Stephenson, D. J. N. J. Soemers and **C. Browne**, "A Ludii Analysis of the French Military Game", *Board Game Studies Colloquium (BGS 2020/21)*, Paris, 2021.

2020    **C. Browne**, "Modelling the Evolution of Traditional Games", *Mapping Antiquity* workshop, Fribourg University, Switzerland, 2020.

**C. Browne**, "Digitising Play: Using Artificial intelligence to Model and Reconstruct Ancient Games", *Playing with Memories* conference, Mumbai, 2021. (virtual)

W. Crist and **C. Browne**, "Playing Ancient Games: Archaeogaming, meet Digital Archaeoludology", *American Schools of Oriental Research (ASOR),* Boston, 2020.

M. Stephenson and **C. Browne**, "Designing, Playing and Testing Games with Ludii", Tutorial, *IEEE Conference on Games (COG 2020)*, Osaka, 2020. (video)

2019    **C. Browne** and J. N. Silva, "Mathematics Through Games", *Board Game Studies Colloquium XXII (BGS 2019)*, Bologna, 2019.

**C. Browne** and É. Piette, "Digital Archaeoludology", *Computer Applications in Archaeology (CAA 2019)*, Krakow, 2019.

É. Piette, D. J. N. J. Soemers, M. Stephenson, C. F. Sironi, M. H. M. Winands and **C. Browne,** "Ludii - Le Systeme Ludemique de General Game Playing", *CNIA 2019*, Toulouse, 2019.

M. Stephenson, É. Piette, and **C. Browne**, "Teaching and Learning with Ludii", *Board Game Studies Colloquium XXII (BGS 2019)*, Bologna, 2019.

**C. Browne**, "Artificial Intelligence and the Heritage of Games", *New Advances in Game AI*, SIKS-DKE symposium, Maastricht University, Netherlands, 2019.

2018      **C. Browne**, "The Digital Ludeme Project", *Board Game Studies (BGS) Colloquium*, Athens, 2018.

         **C. Browne**, "Computer-Assisted Puzzle Design", *Computers and Games (CG 2018)*, Taiwan, 2018.

2012      **C. Browne**, "Evolutionary Game Design", "Humies" Award entry, gold medal winner, *Genetic and Evolutionary Computation Conference (GECCO 2012)*, Philadelphia, USA, 2012.

2010      A. Howlett, S. Colton and **C. Browne**, "Evolving Pixel Shaders for the Prototype Video Game Subversion", *AISB'10: AI and Games*, Leicester, 2011.


# Invited Talks

2023      "Reconstructing Ancient Games", public talk, Museum of World Culture, Gothenburg, Sweden.

2022      "The Digital Ludeme Project: AI for Ancient Games", at *Human-Game AI Interaction,* Schloss Dagstuhl Seminar 22251, Leibniz Center for Informatics, Wadern, Germany.

2020      "Beyond the Square", Beyond Chess: Strategy Games & Technology, *ChessTech 2020*, London, UK.

         "Digitally Modelling Ancient Games", *Games in Cultural History*, Boğaziçi University, Turkey.

         "General Board Geometry", Game AI Research Group, Queen Mary University of London, UK.

         "Digital Archaeoludology: AI for Ancient Games", Open Lecture series, University of Suffolk, UK.

2019      "Digitally Modelling Traditional Games and their Heritage", Trier Center for Digital Humanities, Trier University, Germany.

         "Artificial Intelligence and the Heritage of Games", *Heritage of Games*, Bath University, UK.

         "AI for Ancient Games", *Pleasure Arts and Science (PAS) Festival,* Maastricht, Netherlands.

2018      "Modelling the Evolution of Traditional Games", Faculty of Science and Engineering Strategy Afternoon, Maastricht University, Netherlands.

         "Strategic Potential in Games", University College Dublin, Ireland.

         "The Digital Ludeme Project", DKE Lunchtime Seminar, Maastricht University, Netherlands.

         "The Digital Ludeme Project: Modelling the Evolution of Traditional Games", Game AI Working Group, University Paris Dauphine, France.

         "The Digital Ludeme Project: Modelling the Evolution of Traditional Games", Game Programming Seminar (GPS), University of Tokyo, Japan.

2017      "Some Observations on Automated Strategy Game Design", at *AI-Driven Game Design*, Schloss Dagstuhl Seminar 17471, Leibniz Center for Informatics, Wadern, Germany.

2014      "Games Without Frontiers", QUT, Brisbane, Australia.

2010,11   "Monte Carlo Tree Search", Imperial College London, UK.

2010      "Fast Playouts for Connection Games", Friedrich-Schiller-Universitaet, Jena, Germany.

         "Truchet Curves and Surfaces", London Knowledge Lab, London, UK.

2008      "Evolutionary Game Design", Jet Propulsion Lab, Cambridge University, UK.

# Media and Outreach

**2023**     Day of public talks and workshops on the DLP and reconstructing rules for ancient games, Museum of Word Culture, Gothenburg, Sweden, 3 May, 2023.

**2022**     *Atlas*, interview, Dutch national TV, channel NPO2, 2 March 2022.

I. Akerman, "Rules to These Ancient Games Seemed Lost Forever. Then AI Made Its Move", *WIRED Middle East*, 24 January, 2022.

**2021**     S. H. Yow, "This AI Resurrects Ancient Board Games—and Lets You Play Them", *WIRED Culture*, 26 October 2021.

*MIC Izvestia*, interview, Russian national TV, channel 5, 1 November 2021.

**2020**     *Digital Ludeme Project*, digital trade booth, Essen SPIEL, Germany, 2020.

"I Giochi di Cameron Browne", *Il Fogliaccio Degli Astrattti*, 70, pp. 8–9 and 14_17, 2020.

**2019**     *Top of Mind*, interview by Julie Ross, US national radio station BYU, 19 November 2019.

W. Schoonen, "Dit was het Spel, maar wat waren de Regels? (This was the Game, but what were the Rules?)", *Trouw* (Dutch national newspaper), 19 January 2019, pp. 14–15, 2019.

K. Handscomb, "Adventures in Game Space with Cameron Browne", *Abstract Games Magazine*, 19, pp. 5–7 and 42, 2019.

**2019**     "Machine Learning is About to Revolutionize the Study of Ancient Games", *MIT Technology Review*, 20 June, 2019.

M. Gault, "Scientists Are Discovering Long-Lost Rules for Ancient Board Games", *VICE*, 21 August, 2019.

I. Schultz, "Researchers Are Using Artificial Intelligence to Reconstruct Ancient Games", *Atlas Obscura*, 26 September, 2019.


# Exhibitions

**2023–25**   *A World of Games* major public exhibition at the Museum of World Culture, Gothenburg, Sweden.
The Digital Ludeme Project has three installations in its own room.
Opened on 1 April 2023 and runs for 2.5 years in Gothenburg and Stockholm.
150,000 visitors expected per year (12,000 visitors in first two weeks).


# Editorships

**2015–18**   *Game & Puzzle Design* journal, Founder and Editor-in-Chief.

**2013–**     *Electronic Journal of Computer Science and Information Technology*, Associate Editor.

**2012–**     *International Computer Games Association (ICGA) Journal*, Section Editor.
Co-Editor of special issue on:
• "Computer Aided Game and Puzzle Design" (2019).

**2011–**     *IEEE Transactions on Games*, Associate Editor.
Co-Editor of special issues on:
• "Evolutionary Computation for Games" (2023).
• "General Games" (2014).
• "Computational Aesthetics and Games" (2012).

## Published Board Games

**2017**   *Triad*, Nestorgames, Spain.

**2016**   *Akron*, Nestorgames, Spain.

**2012**   *Shibumi* and *Margo*, Nestorgames, Spain.

*Yavalath Deluxe* and *Pentalath*, Nestorgames, Spain
Both games invented by my Ludi program.

**2011**   *Stax*, Nestorgames, Spain.

**2010**   *Akron*, *Margo* and *Triad*, Pancerola, Poland.

*Celtica*, Nestorgames, Spain.

**2009**   *Cross*, Nestorgames, Spain.

*Mutton* and *Rebel Moon Defense*, Nestorgames, Spain (co-designed with Stephen Tavener).

**2008**   *Palago*, Colour of Strategy, New Zealand. **Game of the Year (New Zealand) for 2010.**

*Limit*, Nestorgames, Spain.

*Yavalath*, Nestorgames, Spain. **The world's first published computer-invented game.**
Ranked in the top #100 (i.e. top 2%) of all abstract board games on BoardGameGeek in 2010.

**2006**   *Trilith*, IQ Ideas, New Zealand.

**2000–**   Total of 71 published and non-published games listed on my BoardGameGeek designer's page.


## Published Mobile Games

**2010–12**   *Hour Maze*, app for puzzle game by M. Reilly (for iPhone and iPad).

*Life Flow*, interactive art piece (for iPad).


## Published Artwork

**2011**   Figures for J.-P. Delahaye, "Infini et impossible!", *Pour la Science*, 203, pp. 88–93, 2011.

Web design and logos for the ERC-funded project *Indigeneity in the Contemporary World.*

**2010**   Publicity art for the 10th anniversary of the California Mathematics Council.

**2009**   Figures for C. Pickover, *The Math Book*, Sterling, New York, 2009.

Cover artwork for the board game *Mutton.*

**2008**   Figures for A. Tiedermann, *Pythagoras' Firkant: Matemagi for Talfreaks*, Forlaget Matematik, Nordby, 2008.

Submissions to the *11th Annual Bridges Conference (Bridges 2008)* exhibition, Leeuwarden.

Cover art for all 2008 issues of the *Computers & Graphics* journal.

**2007**   Cover art for *Fractals: Complex Geometry, Patterns, and Scaling in Nature and Society*, Sept., 2007.

**2006**   Figures for C. Pickover, *The Mobius Strip*, Thunder's Mouth Press, New York, 2006.

**2005**   Cover art and figures for C. Browne, *Connection Games: Variations on a Theme*, AK Peters, Massachusetts, 2005.

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|---|---|
| 2003 | Cover art for H. Gilbert and A. Johnston, *In Transit: Travel, Text, Empire*, Peter Lang, 2003. |
| 2000 | Cover art and figures for C. Browne, *Hex Strategy: Making The Right Connections*, AK Peters, Massachusetts, 2000. |

## Committees

| | |
|---|---|
| 2020– | IEEE Computational Intelligence Society, Standards Committee, "Vocabulary of Standard Words in Video Games". |
| 2019– | IEEE Computational Intelligence Society, Taskforce on Game Evaluation. |
| 2018– | IEEE Computational Intelligence Society, Games Technical Committee (GTC). |

## Event Organisation

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|---|---|
| 2023 | *A World of Games*, co-organiser, part of major exhibition at the Museum of World Culture, Sweden, running from 1 April 2023 for 2.5 years in Gothenberg and Stockholm. |
| | *Game Measures and Player Experience*, co-organiser, Schloss Dagstuhl Research Meeting 23033, Leibniz Center for Informatics, Wadern, Germany. |
| 2022 | *Computers and Games (CG 2022)*, Program Co-Chair, virtual conference. |
| | *Game AI Applications for Historical Games Research*, co-organiser, 2nd Digital Ludeme Project Workshop, Maastricht, Netherlands. |
| | *Ludii GGP AI Competition*, co-organiser, part of ICGA Computer Olympiad, €9,000 prize money. |
| 2021 | *Advances in Computer Games (ACG 2021)*, Program Co-Chair, virtual conference. |
| 2019 | *Digital Archaeoludology*, co-organiser, 1st Digital Ludeme Project Workshop, Schloss Dagstuhl. Research Meeting 19153, Leibniz Center for Informatics, Wadern, Germany. |
| 2018 | *IEEE Conference on Games (CG 2018)*, Proceedings Chair, Maastricht, Netherlands. |
| | *1st FDG Workshop on Tabletop Games*, co-organiser, *FDG 2018*, Malmo, Sweden. |
| 2010–13 | *AI & Game Aesthetics*, co-organiser, *AIIDE 2013* workshop, Boston, USA. |
| 2010 | *MCTS: State of the Art*, organiser, Imperial College London. **World's first international symposium on Monte Carlo Tree Search (MCTS).** |
| | *3rd Networking Event*, organiser, AI & Games Network, Dana Centre, London. |
| | *UCT for Games and Beyond*, joint meetings with project partners in UK and Spain. |
| | Android and iPad programming workshops, organiser, Imperial College London. |

## Teaching

| | |
|---|---|
| 2018–23 | Department of Advanced Computing Sciences (DACS), Maastricht University. |

**Masters**
• KEN4123 – Intelligent Search and Games

**Bachelors**
• KEN1520 – Software Engineering
• SCI2011   – Introduction to Programming
• PRA2003 – Programming Skills

# Supervisions

**Postdoc.**   Dr W. Crist, Archaeologist/Anthropologist on the Digital Ludeme Project (2019–2023).
Now working as a Lecturer at Leiden University, Netherlands.

Dr E. Piette, Game Engine Researcher/Developer on the Digital Ludeme Project (2018–2023).
Now working as a Lecturer at Leuven University, Belgium.

Dr M. Stephenson, Data Scientist on the Digital Ludeme Project (2019–2022).
Now working as a Lecturer at Flinders University, Australia.

**PhD**   D. J. N. J. Soemers, *Learning State-Action Features for General Game Playing*, PhD Thesis,
Department of Advanced Computing Sciences, Maastricht University, Netherlands, 2023.
Now working as a Postdoctoral Researcher at Maastricht University.

J. West, *Deep Learning for General Games*, PhD Thesis, Faculty of Science and Engineering,
Queensland University of Technology, Brisbane, Australia, 2020.
Winner of postdoctoral Fulbright Award.

**Masters**   M. Niebisch, *Weighting Heuristics in General Game Playing*, Masters Thesis, Maastricht University, 2021.

A. Gramlich, *Explaining Features for General Games*, Masters Thesis, Maastricht University, 2021.

L. Breuer, *Strategic Depth in Games*, Masters Thesis, Maastricht University, 2021.

M. Niebisch, *Evolving Games Using the Ludii General Game System*, Masters Research Internship,
Maastricht University, 2020.

M. Hanreider, *Learning to Crawl: Adaptive Focused Crawling on the Dark Web*, Masters Thesis,
Maastricht University, 2020.

T. Begum, *Graph Theory Games*, Masters Thesis, Maastricht University, 2020.

C. Hacking, *AI Game Design Generation And Evaluation For 3D Platformer Games*, Masters Thesis,
Maastricht University, 2019.

T. Begum, *Union Find for Game Modelling*, Masters Research Internship, Maastricht University, 2019.

J. Opgen-Rhein, *Pattern Matching Features For A Traditional Board Game*, Masters Thesis, Maastricht
University, 2019.

L. Hufkens, *Understanding Logic Puzzles*, Masters Research Internship, Maastricht University, 2019.

G. Williams, *Determining Game Quality Through UCT Tree Shape Analysis*, Masters Thesis, Imperial
College London, 2011.

100+ student supervisions for Masters Research Project groups at Maastricht University.

**Bachelors**   30+ Bachelors thesis and project supervisions at Imperial College London, Queensland University of
Technology and Maastricht University.

# Reviewer For

**Journals**   *IEEE Transactions on Games, Journal of AI Research, International Computer Games Association
(ICGA) Journal, Journal of Mathematics and the Arts, Journal of Entertainment Computing
Journal of Game Studies, Neural Computing & Applications, Theoretical Computer Science, Symmetry,
IEEE Transactions on Systems, Man and Cybernetics - Part B, PeerJ Computer Science, Artificial
Intelligence Review, ACM Special Interest Group on Computer Graphics and Interactive Techniques.*

**Publishers**   Springer, CRC Press, Taylor and Francis (book proposals).

# Programme Committees

**2024**    *Association for the Advancement of Artificial Intelligence (AAAI 2024)*

**2023**    *IEEE International Conference on Tools with Artificial Intelligence (ICTAI 2023)*
*International Conference on Videogame Sciences and Art (VJ 2023)*
*Association for the Advancement of Artificial Intelligence (AAAI 2023)*
*Procedural Content Generation Workshop (PCG @ DiGRA/FDG 2023)*
*Foundations of Digital Games (DiGRA/FDG 2023)*
*IEEE Conference on Games (CoG 2023)*
*Technologies and Applications of Artificial Intelligence (TAAI 2023)*
*Computers and Games (CG 2023)*

**2022**    *Association for the Advancement of Artificial Intelligence (AAAI 2022)*
*IEEE Conference on Games (CoG 2022)*
*Workshop on Tabletop Games (TTG @ DiGRA/FDG 2022)*
*Foundations of Digital Games (DiGRA/FDG 2022)*
*Technologies and Applications of Artificial Intelligence (TAAI 2022)*
*Computers and Games (ACG 2022)*

**2021**    *Foundations of Digital Games (DiGRA/FDG 2021)*
*IEEE Conference on Games (CoG 2021)*
*Association for the Advancement of Artificial Intelligence (AAAI 2021)*
*Technologies and Applications of Artificial Intelligence (TAAI 2021)*
*Advances in Computer Games (ACG 2021)*

**2020**    *IEEE Symposium on Computational Intelligence (SSCI 2020)*
*IEEE Conference on Games (CoG 2020)*
*Technologies and Applications of Artificial Intelligence (TAAI 2020)*
*International Joint Conference on Artificial Intelligence (IJCAI 2020)*
*European Conference on Artificial Intelligence (ECAI 2020)*
*Association for the Advancement of Artificial Intelligence (AAAI 2020)*
*GECCO Digital Entertainment Technologies and Arts (GECCO-2020 DETA)*
*AI & Games Symposium (AISB 2020)*
*Foundations of Digital Games (DiGRA/FDG 2020)*
*IEEE Congress on Evolutionary Computation (CEC 2020)*
*Procedural Content Generation (PCG @ FDG 2020)*

**2019**    *International Joint Conference on Artificial Intelligence (IJCAI 2019)*
*IEEE Conference on Games (CoG 2019)*
*Technologies and Applications of Artificial Intelligence (TAAI 2019)*
*Procedural Content Generation and Tabletop Games (PCG + TTG @ FDG 2019)*
*IEEE Congress on Evolutionary Computation (CEC 2019)*
*GECCO Digital Entertainment Technologies and Arts (GECCO-2019 DETA)*
*Computers and Games (CG 2019)*

**2018**    *IEEE Computational Intelligence in Games (CIG 2018)*
*International Joint Conference on Artifical Intelligence (IJCAI-ECAI-18)*
*GECCO Digital Entertainment Technologies and Arts (GECCO-2018 DETA)*
*Advances in Computer Games (ACG 2018)*

**2017**    *Computational Creativity and Games Workshop (CCGW 2017)*
*Digital Games Research Association (DiGRA 2017)*
*Foundations of Digital Games (FDG 2017)*
*IEEE Computational Intelligence in Games (CIG 2017)*
*AI & Games Symposium (AISB 2017)*
*GECCO Digital Entertainment Technologies and Arts (GECCO-2017 DETA)*
*Computers and Games (CG 2017)*

**2016**      *Procedural Content Generation Workshop (PCG @ DiGRA/FDG 2016)*
          *Foundations of Digital Games (DiGRA/FDG 2016)*
          *IEEE Computational Intelligence in Games (CIG 2016)*
          *Advances in Computer Games (ACG 2016)*
          *Computational Creativity & Games Workshop (CCGW 2016)*
          *GECCO Digital Entertainment Technologies and Arts (GECCO-2016 DETA)*
          *Technologies and Applications of Artificial Intelligence (TAAI 2016)*

**2015**      *Foundations of Digital Games (FDG 2015)*
          *IEEE Computational Intelligence in Games (CIG 2015)*
          *Advances in Computer Games (ACG 2015)*
          *Technologies and Applications of Artificial Intelligence (TAAI 2015)*

**2014**      *IEEE Computational Intelligence in Games (CIG 2014)*

**2013**      *AAAI Conference on AI and Interactive Digital Entertainment (AIIDE 2013)*
          *International Conference on Technologies and Applications of Artificial Intelligence (TAAI '13)*
          *IEEE Computational Intelligence in Games (CIG 2013)*
          *IEEE Symposium on Computational Intelligence (CI 2013)*
          *IEEE Congress on Evolutionary Computation (CEC 2013)*
          *International Computer Games Association Conference (CG 2013)*

**2012**      *Third Workshop on Procedural Generation in Games (PCG2012)*
          *IEEE Computational Intelligence in Games (CIG 2012)*
          *European Conference on the Applications of Evolutionary Computation (EvoApps '12)*

**2011**      *AISB Symposium: AI & Games (AI-4-Games)*
          *IEEE Computational Intelligence in Games (CIG 2011)*
          *AI & Games Symposium (AISB '11)*

**2010**      *IEEE Games Innovation Conference (GIC'2010)*
          *11th annual European GAMEON Conference (GAMEON'2010)*
          *IEEE Conference on Computational Intelligence in Games (CIG'2010)*
          *Workshop on Procedural Content for Computer Games (PC Games 2010)*
          *4th International Conference on the Foundations of Digital games (ICFDG 2010)*
          *AIBS Symposium on AI & Games (AI&GAMES 2010)*

**2009**      *Fourth International Conference on the Foundations of Digital Games (ICFDG 2009)*