

# Vadim Bulitko

*Professor, Artificial Intelligence*

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## Academic Interests

### Current

- Artificial general intelligence
- Cognitive processes and models in humans, animals and computers
- Real-time heuristic search

### Past

- AI for player/user modeling and experience management
- Machine learning in computer vision
- Petri nets for AI
- Recursion theory

## Education

- 98-00 **Ph.D. in Computer Science**, *University of Illinois at Urbana-Champaign.*
- 96-98 **M.Sc. in Computer Science**, *University of Illinois at Urbana-Champaign.*
- 91-94 **B.Sc. in Mathematics**, *Odessa National University.*

## Experience

- 18-on **Professor**, *Computing Science*, University of Alberta.
- 15 **Visiting Researcher**, *Computational Media*, University of California Santa Cruz.
- 09 **Visiting Associate Professor**, *Computer Science*, University of British Columbia Okanagan.
- 08 **Visiting Researcher**, *Computer Science*, Reykjavik University.
- 08-18 **Associate Professor**, *Computing Science*, University of Alberta.
- 07 **Visiting Researcher**, *Institute for Creative Technologies*, University of Southern California.
- 05 **Visiting Researcher**, *Institut d'Investigació en Intel·ligència Artificial*.
- 05 **Visiting Researcher**, *Computer Science*, University of Southern California.
- 01-08 **Assistant Professor**, *Computing Science*, University of Alberta.
- 00-01 **Research Scientist**, *Forestry Unit*, Alberta Research Council.
- 00 **Sessional Instructor**, *Computing Science*, University of Alberta.
- 00 **Research Associate**, *Computing Science*, University of Alberta.
- 94 **Software Developer**, *Automated Vision Systems, Ltd.*
- 90-91 **Software Developer**, *Alternativa.*

## Student Supervision

### Current Ph.D. students

- 17-on **Sergio Poo Hernandez**

*Recruitment scholarship*

### Current M.Sc. students | Thesis-based

- 18-on **Joshua Sirota**
- 17-on **Everton Schumacker Soares**

*Queen Elizabeth II*

### Graduated Ph.D. students

07-15 David Thue *NSERC PGS-D, iCORE*  
04-12 Greg Lee *NSERC PGS-D, iCORE, Ralph Steinhauer*

### Graduated M.Sc. students | Thesis-based

17-18 Rameel Sethi  
17-18 Devon Sigurdson *British Petroleum*  
13-15 Sergio Poo Hernandez  
14-15 Yathirajan Brammadesam Manavalan  
13-15 Thórey Maríusdóttir  
11-13 Alejandro Ramirez  
09-11 Andrew Cenknier *Queen Elizabeth II*  
09-11 Daniel Huntley *NSERC PGS-M, iCORE*  
06-09 Stephen Hladky *NSERC PGS-M, iCORE, Queen Elizabeth II*  
05-09 Jieshan “Shanny” Lu  
05-08 D. Chris Rayner  
05-07 David Thue *NSERC PGS-M, iCORE, FGSR Entrance Bursary, Walter Johns*  
04-06 Cosmin Paduraru *iCORE, Alberta Ingenuity*  
01-03 Lihong Li  
02-04 Greg Lee *NSERC PGS-M*  
01-03 Ilya Levner *NSERC PGS-M*

### Post-doctoral Fellows

12-15 Matthew Brown  
01 Ying Yuan

### Research Project Students | Graduate level

17 Lovania Goorimoorthee  
15 Kevin Edey  
15-17 Sergio Poo Hernandez  
15-16 Yathirajan Brammadesam Manavalan  
13-14 Emilie St. Hilaire  
12 D. Chris Rayner  
12 Shane Riczu

### Research Project Students | Undergraduate level

18-on Kacy Doucet  
18 Colter MacDonald  
18 Morgan Cselinacz *NSERC USRA*  
15, 16, 18 Alexandra Czeto *NSERC USRA*  
18 Robert MacGillivray *NSERC USRA*  
17 Isadora Sophia Garcia Rodopoulos  
17 Shelby Carleton  
17 Delia Cormier  
16 Ronghao “Steve” Yang  
16 YiJi Zhao  
16 Jennifer Yuen *NSERC USRA*  
15 Grace Kinley  
15 Christina Ho  
15, 16 Alexander Sampley *NSERC USRA*

14	Jaclynn Wong	
14	Matthew Fritze	
14	Renato Ribeiro	CAPES
14	Igor Antônio Pereira Machado	CNPq
14	Alex Gonçalves	CNPq
13-14	Sarah Beck	
11	Stephen Jahns	NSERC USRA
10	Trevon Romanuik	
08, 09	Mike Webb	NSERC USRA (×2)
07	Trevor Bekolay	NSERC USRA
07	Freeman Fan	
06	Timothy Yau	NSERC USRA
06	Eric Wasylishen	NSERC USRA
06	Tian Tian	
05-06	Mitja Luštrek	
05	Burc Gunes	
04	Scott Thiessen	
04	Lawrence Chan	
03	Jesse Reid	
03	Dorothy Lau	
01, 02	Guanwen Zhang	

### Research Project Students | High-school interns

18	Grace Leung	FSST
14	Allyson Shewchuk	WISEST
14	Ramnik Sekhon	HIP
14	Frederic Sauve-Hoover	HIP
14	Seth Traverse	HIP
14	Leoza Kabir	HIP
14	Luke Slevinsky	HIP
14	Jesse Underwood	HIP
07	Phillip Silver	HIP
03	Jane Hilderman	WISEST

## Additional Student Responsibilities

### Master and Ph.D. Final Examinations

18	Marius Stanescu	<i>Ph.D., Computing Science, University of Alberta</i>
17	Nicolas Barriga	<i>Ph.D., Computing Science, University of Alberta</i>
16	Sankalp Prabhakar	<i>M.Sc., Computing Science, University of Alberta</i>
16	Dave Churchill	<i>Ph.D., Computing Science, University of Alberta</i>
15	Fan Xie	<i>Ph.D., Computing Science, University of Alberta</i>
15	Andrew Israelsen	<i>Master, Music, University of Alberta</i>
15	Neesha Desai	<i>Ph.D., Computing Science, University of Alberta</i>
14	Sriram Srinivasan	<i>Master, Computing Science, University of Alberta</i>
14	Rick Valenzano	<i>Ph.D., Computing Science, University of Alberta</i>
14	Reza Sebti	<i>Master, Philosophy, University of Alberta</i>
14	Zhaoxing Bu	<i>Master, Computing Science, University of Alberta</i>

13	<b>Nika Pona</b>	<i>Master, Philosophy, University of Alberta</i>
13	<b>Marc Bellemare</b>	<i>Ph.D., Computing Science, University of Alberta</i>
12	<b>Bo Pang</b>	<i>Master, Computing Science, University of Alberta</i>
12	<b>Jing Zhang</b>	<i>Master, Computing Science, University of Alberta</i>
12	<b>Mohammad Ajallooeian</b>	<i>Master, Computing Science, University of Alberta</i>
12	<b>Michael Parnes</b>	<i>Master, Psychology, University of Alberta</i>
11	<b>Jason Taylor</b>	<i>Ph.D., Philosophy, University of Alberta</i>
11	<b>Aditya Bhargava</b>	<i>Master, Computing Science, University of Alberta</i>
10	<b>Brian Duffels</b>	<i>Master, Psychology, University of Alberta</i>
10	<b>Yavar Nadaf</b>	<i>Master, Computing Science, University of Alberta</i>
09	<b>Christopher Kerr</b>	<i>Master, Computing Science, University of Alberta</i>
09	<b>Richard Zhao</b>	<i>Master, Computing Science, University of Alberta</i>
06	<b>Sverrir Sigmundarson</b>	<i>Master, Computer Science, Reykjavik University</i>
05	<b>Patrick McGivern</b>	<i>Ph.D., Philosophy, University of Alberta</i>
	<b>Ph.D. Candidacy Examinations</b>	
18	<b>Erik deJong</b>	<i>Educational Psychology, University of Alberta</i>
15	<b>Nicolas Barriga</b>	<i>Computing Science, University of Alberta</i>
14	<b>Ruojing Zhou</b>	<i>Psychology, University of Alberta</i>
14	<b>Dave Churchill</b>	<i>Computing Science, University of Alberta</i>
13	<b>Nolan Bard</b>	<i>Computing Science, University of Alberta</i>
13	<b>Fan Xie</b>	<i>Computing Science, University of Alberta</i>
12	<b>Rick Valenzano</b>	<i>Computing Science, University of Alberta</i>
12	<b>Levi Lelis</b>	<i>Computing Science, University of Alberta</i>
11	<b>D. Chris Rayner</b>	<i>Computing Science, University of Alberta</i>
10	<b>Eric Legge</b>	<i>Psychology, University of Alberta</i>
	<b>Supervisory Committee Service</b>	
15-17	<b>Nicolas Barriga</b>	<i>Computing Science, University of Alberta</i>
13-15	<b>Fan Xie</b>	<i>Computing Science, University of Alberta</i>
12-14	<b>Rick Valenzano</b>	<i>Computing Science, University of Alberta</i>
12-16	<b>Dave Churchill</b>	<i>Computing Science, University of Alberta</i>
11-15	<b>Neesha Desai</b>	<i>Computing Science, University of Alberta</i>
	<b>Mentorship</b>	
16	<b>Kris De Asis</b>	<i>Computing Science, University of Alberta</i>
16	<b>Fushan Li</b>	<i>Computing Science, University of Alberta</i>
16	<b>Chen Ma</b>	<i>Computing Science, University of Alberta</i>
16	<b>Chi Zhang</b>	<i>Computing Science, University of Alberta</i>
16	<b>Chang Liu</b>	<i>Computing Science, University of Alberta</i>
16	<b>Erick Eduardo Ochoa Lopez</b>	<i>Computing Science, University of Alberta</i>
16	<b>Shrimanti Ghosh</b>	<i>Computing Science, University of Alberta</i>
16	<b>Salwa Abougamila</b>	<i>Computing Science, University of Alberta</i>
16	<b>Tanvir Sajed</b>	<i>Computing Science, University of Alberta</i>
16	<b>Martin Ichilevici de Oliveira</b>	<i>Computing Science, University of Alberta</i>
12	<b>Hendrik Baier</b>	<i>Computer Science, Maastricht University</i>

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## Courses Taught

### Graduate

CMPUT 651	<b>Artificial General Intelligence &amp; A-life</b>	F18
CMPUT 605	<b>Deep Learning with Applications to Sound Analysis and Behavior Detection</b>	F17
CMPUT 605	<b>Robust Real-time Heuristic Search</b>	W17
CMPUT 701	<b>A-Life for Real-time Heuristic Search</b>	W17
CMPUT 651	<b>Real-time Heuristic Search</b>	F16
CMPUT 605	<b>Artificial Intelligence for Interactive Storytelling</b>	F12
CMPUT 651	<b>Topics in AI with Applications to Video Games</b>	F09, F11, F13
CMPUT 651	<b>Decision Making in AI: From Foundations to the State of the Art</b>	F04, F05, F06
CMPUT 650	<b>Topics in AI: Learning To Make Decisions</b>	F01, F02
CMPUT 605	<b>Individual Studies in Quantum Computing</b>	W02

### Undergraduate

CMPUT 400	<b>Industrial Internship Practicum</b>	F14, W15
CMPUT 250	<b>Computers and Games</b>	F09, W10, F10, W11, F11, W12, F12, W13, F13, W14, F14, W15, F16, W17, F17, W18, W19
COSC 419D	<b>Computers and Games</b>	W09
CMPUT 272	<b>Formal Systems and Logic in Computing Science</b>	W02, W03, W04
CMPUT 115	<b>Programming With Data Structures</b>	F05, W06, W07, W08
CMPUT 114	<b>Introduction to Computing Science</b>	F03, F04, F07, W11
CMPUT 101	<b>Introduction to Computing</b>	F00, W13

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## Publications

### Journal papers (refereed)

- 2018 Nicola Plowes and Yu Du and Jenna Congdon and Vadim Bulitko and Everton Schumacker Soares and Marcia Spetch. *Odometry and Backtracking: Social and Individual Navigation in Group Foraging Desert Harvester Ants (Veromessor Pergandei)*. *Animal Cognition*. doi: 10.1007/s10071-018-1218-7.
- 2016 Nathan Sturtevant and Vadim Bulitko. *Scrubbing During Learning In Real-time Heuristic Search*. *Journal of Artificial Intelligence Research (JAIR)*, 57:307-343. AAAI Press.
- 2015 Danielle M. Baron and Alejandro J. Ramirez and Vadim Bulitko and Christopher R. Madan and Ariel Greiner and Peter L. Hurd and Marcia L. Spetch. *Practice Makes Proficient: Pigeons (Columba livia) Learn Efficient Routes on Full-circuit Navigational Traveling Salesperson Problems*. *Animal Cognition*. 18:53–64.
- 2014 Alejandro Ramirez and Vadim Bulitko. *Automated Planning and Player Modelling for Interactive Storytelling*. *IEEE Transactions on Computational Intelligence and AI in Games*. PP(99). Pages 12. doi: 10.1109/TCI-AIG.2014.2346690.
- 2013 Andrew Cenkner and Vadim Bulitko and Marcia Spetch and Eric Legge and Craig Anderson and Matthew Brown. *Passing a Hide and Seek Third-Person Turing Test*. *IEEE Transactions on Computational Intelligence and AI in Games*. PP(99). Pages 13. doi: 10.1109/TCIAIG.2013.2275162.
- 2013 Greg Lee and Vadim Bulitko and Elliot Ludvig. *Automated Story Selection for Color Commentary in Sports*. *IEEE Transactions on Computational Intelligence and AI in Games*. PP(99). Pages 12. doi: 10.1109/TCI-AIG.2013.2275199.
- 2012 Vadim Bulitko and Matthew Brown. *Flow Maximization as a Guide to Optimizing Performance: A Computational Model*. *Advances in Cognitive Systems*, 2:239-256. Cognitive Systems Foundation.
- 2012 Ramon Lawrence and Vadim Bulitko. *Database-Driven Real-time Heuristic Search in Video-game Pathfinding*. *IEEE Transactions on Computational Intelligence and AI in Games*. PP(99). Pages 30. doi: 10.1109/TCI-AIG.2012.2230632.
- 2012 Eric L.G. Legge and Marcia L. Spetch and Andrew Cenkner and Vadim Bulitko and Craig Anderson and Matthew Brown and Donald Heth. *Not All Locations Are Created Equal: Exploring How Adults Hide and Search for Objects*. *PLoS ONE* 7(5): e36993. doi:10.1371/journal.pone.0036993.

- 2010 Vadim Bulitko and Yngvi Björnsson and Ramon Lawrence. *Case-Based Subgoaling in Real-Time Heuristic Search for Video Game Pathfinding*. Journal of Artificial Intelligence Research (JAIR), 39: 269-300. AAAI Press.
- 2009 Katherine J. Talbot and Eric L.G. Legge and Vadim Bulitko and Marcia L. Spetch. *Hiding and Searching Strategies of Adult Humans in a Virtual and a Real-Space Room*. Learning and Motivation. Volume 40, issue 2 (May), pages 221-233. Elsevier.
- 2008 Vadim Bulitko and Mitja Luštrek and Jonathan Schaeffer and Yngvi Björnsson and Sverrir Sigmundarson. *Dynamic Control in Real-Time Heuristic Search*. Journal of Artificial Intelligence Research (JAIR), 32: 419-452. AAAI Press.
- 2007 Vadim Bulitko and Nathan Sturtevant and Jieshan Lu and Timothy Yau. *Graph Abstraction in Real-time Heuristic Search*. Journal of Artificial Intelligence Research (JAIR), 30:51-100.
- 2007 Greg Lee and Vadim Bulitko and Ilya Levner. *HSMM: Heuristic Search with Meta-Models for Image Interpretation*. Journal of Multiple-Valued Logic and Soft Computing, 14(1-2):129-144.
- 2007 Lihong Li and Vadim Bulitko and Russell Greiner. *Focus of Attention in Reinforcement Learning*. Journal of Universal Computer Science (J.UCS), 13(9):1246-1269.
- 2006 Vadim Bulitko and Greg Lee. *Learning in Real Time Search: A Unifying Framework*. Journal of Artificial Intelligence Research (JAIR), 25:119-157.
- 2006 Vadim Bulitko and David C. Wilkins. *ML-TIPN: An Algorithm for Automated Acquisition of Domain Models based on Time Interval Petri Nets*. Journal of Multiple-Valued Logic and Soft Computing, pages 17, 12:391-407.
- 2006 Valeriy K. Bulitko and Burton Voorhees and Vadim Bulitko. *Discrete Baker Transformations for Linear Cellular Automata Analysis*. Journal of Cellular Automata, 1(1):41-70.
- 2003 Vadim Bulitko and David C. Wilkins. *Qualitative Simulation of Temporal Concurrent Processes Using Time Interval Petri Nets*. Artificial Intelligence (AIJ), 144(1-2):95-124.
- 2003 Valeriy K. Bulitko and Vadim Bulitko. *On Existence of Complete Sets for Bounded Reducibilities*. Mathematical Logic Quarterly, 6(49):567-575.
- 1998 Valeriy K. Bulitko and Vadim Bulitko. *On A Criterion For NP-completeness*. Ukrainian Mathematical Journal, 50(12):1686-1691.
- 1995 Vadim Bulitko. *On Completeness of Pseudosimple Sets*. Journal of Universal Computer Science (J.UCS), 1(2):151-154.

### Conference papers (fully refereed; acceptance rate %)

- 2018 David Thue and Vadim Bulitko. *Toward a Unified Understanding of Experience Management*. In proceedings of the AAAI Conference on Artificial Intelligence and Interactive Digital Entertainment (AIIDE), in press. [ $19/76 = 25\%$ ]
- 2018 Everton Schumacker Soares and Vadim Bulitko and Kacy Doucet and Morgan Cselinacz and Terence Soule and Samantha Heck and Landon Wright. *Learning to Recognize A-Life Behaviours*. In poster collection: The Annual Conference on Advances in Cognitive Systems (ACS). [ $48/53 = 91\%$ ]
- 2018 Vadim Bulitko and Kacy Doucet. *Anxious Learning in Real-time Heuristic Search*. In proceedings of the IEEE Conference on Computational Intelligence in Games (CIG), 393-396. [ $6/18 = 33\%$ ]
- 2018 Rameel Sethi and Noah Weninger and Abram Hindle and Vadim Bulitko and Michael Frishkopf. *Training Deep Convolutional Networks with Unlimited Synthesis of Musical Examples for Multiple Instrument Recognition*. In proceedings of The International Sound & Music Computing Conference (SMC), 292-299. [ $81/263 = 31\%$ ]
- 2018 Devon Sigurdson and Vadim Bulitko and William Yeoh and Carlos Hernandez and Sven Koenig. *Multi-agent Pathfinding with Real-time Heuristic Search*. In proceedings of the IEEE Conference on Computational Intelligence in Games (CIG), 173-180. [ $51/110 = 46\%$ ]
- 2017 Devon Sigurdson and Vadim Bulitko. *Deep Learning for Real-time Heuristic Search Algorithm Selection*. In proceedings of the AAAI Conference on Artificial Intelligence and Interactive Digital Entertainment (AIIDE), 108-114. [ $19/76 = 25\%$ ]
- 2017 Mina Abdi Oskouie and Vadim Bulitko. *Robustness of Real-time Heuristic Search Algorithms to Read/Write Error in Externally Stored Heuristics*. In proceedings of the AAAI Conference on Artificial Intelligence and Interactive Digital Entertainment (AIIDE), 137-143. [ $38/76 = 50\%$ ]

- 2017 Carlos Hernandez Ulloa and Adi Botea and Jorge Baier and Vadim Bulitko. *Online Bridged Pruning for Real-Time Search with Arbitrary Lookaheads*. In proceedings of the International Joint Conference on Artificial Intelligence (IJCAI), 510-516. [ $660/2540 = 26\%$ ]
- 2016 Vadim Bulitko. *Per-map Algorithm Selection in Real-time Heuristic Search*. In proceedings of the AAAI Conference on Artificial Intelligence and Interactive Digital Entertainment (AIIDE), pages 143-148. [ $35/63 = 56\%$ ]
- 2016 Vadim Bulitko. *Searching for Real-time Search Algorithms*. In proceedings of the Annual Symposium on Combinatorial Search (SoCS), pages 121-122. [ $22/34 = 65\%$ ]
- 2016 Vadim Bulitko and Alexander Sampley. *Weighted Lateral Learning in Real-time Heuristic Search*. In proceedings of the Annual Symposium on Combinatorial Search (SoCS), pages 10-18. [ $13/34 = 38\%$ ]
- 2016 Vadim Bulitko. *Evolving Real-time Heuristic Search Algorithms*. In proceedings of the Fifteenth International Conference on the Synthesis and Simulation of Living Systems (ALIFEXV), pages 108-115.
- 2015 Thórey Maríusdóttir and Vadim Bulitko and Matthew Brown. *Maximizing Flow as a Metacontrol in Angband*. In proceedings of the Eleventh AAAI Conference on Artificial Intelligence and Interactive Digital Entertainment (AIIDE), pages 149-155. [ $31/53 = 59\%$ ]
- 2015 Yathirajan Brammadesam Manavalan and Vadim Bulitko and Marcia Spetch. *A Lightweight Algorithm for Procedural Generation of Emotionally Affected Behavior and Appearance*. In proceedings of the Eleventh AAAI Conference on Artificial Intelligence and Interactive Digital Entertainment (AIIDE), pages 142-148. [ $31/53 = 59\%$ ]
- 2015 Sergio Poo Hernandez and Vadim Bulitko and Marcia Spetch. *Keeping the Player on an Emotional Trajectory in Interactive Storytelling*. In proceedings of the Eleventh AAAI Conference on Artificial Intelligence and Interactive Digital Entertainment (AIIDE), pages 65-71. [ $15/53 = 28\%$ ]
- 2015 Vadim Bulitko and David Thue. *A Call for Flow Modeling in Interactive Storytelling*. In proceedings of The Third Annual Conference on Advances in Cognitive Systems (ACS), pages 10. [ $32/36 = 89\%$ ]
- 2014 Yathirajan Brammadesam Manavalan and Vadim Bulitko. *Appraisal of Emotions from Resources*. In proceedings of The Seventh International Conference on Interactive Digital Storytelling (ICIDS), LNCS 8832, pages 224-227. [ $29/62 = 47\%$ ]
- 2014 Sergio Poo Hernandez and Vadim Bulitko and Emilie St.Hilaire. *Emotion-based Interactive Storytelling with Artificial Intelligence*. In proceedings of the Tenth AAAI Conference on Artificial Intelligence and Interactive Digital Entertainment (AIIDE), pages 146-152. [ $30/53 = 57\%$ ]
- 2014 Nathan Sturtevant and Vadim Bulitko. *Reaching the Goal in Real-Time Heuristic Search: Scrubbing Behavior is Unavoidable*. In proceedings of the Seventh Annual Symposium on Combinatorial Search (SoCS), pages 166-174. [ $22/32 = 69\%$ ]
- 2013 Alejandro Ramirez and Vadim Bulitko and Marcia Spetch. *Evaluating Planning-Based Experience Managers for Agency and Fun in Text-based Interactive Narrative*. In proceedings of the Ninth AAAI Conference on Artificial Intelligence and Interactive Digital Entertainment (AIIDE), pages 65-71. Boston, Massachusetts, October 2013. [ $15/55 = 27\%$ ]
- 2012 Greg Lee and Vadim Bulitko and Elliot Ludvig. *Sports Commentary Recommendation System (SCoReS): Machine Learning for Automated Narrative*. In proceedings of the Eighth AAAI Conference on Artificial Intelligence and Interactive Digital Entertainment (AIIDE), pages 32-37. Stanford, California, October 2012. [ $16/59 = 27\%$ ]
- 2012 Alejandro Ramirez Sanabria and Vadim Bulitko. *Telling Interactive Player-specific Stories and Planning for it : ASD + PaSSAGE = PAST*. In proceedings of the Eighth AAAI Conference on Artificial Intelligence and Interactive Digital Entertainment (AIIDE), pages 173-178. Stanford, California, October 2012. [ $32/59 = 54\%$ ]
- 2012 Vadim Bulitko and Chris Rayner and Ramon Lawrence. *On Casebase Formation in Real-time Heuristic Search*. In proceedings of the Eighth AAAI Conference on Artificial Intelligence and Interactive Digital Entertainment (AIIDE), pages 106-111. Stanford, California, October 2012. [ $32/59 = 54\%$ ]
- 2011 David Thue and Vadim Bulitko and Marcia Spetch and Trevon Romaniuk. *A Computational Model of Perceived Agency in Video Games*. In proceedings of the Seventh AAAI Conference on Artificial Intelligence and Interactive Digital Entertainment (AIIDE), pages 91-96. Stanford, California, October 2011. [ $17/48 = 35\%$ ]

- 2011 Andrew Cenkner and Vadim Bulitko and Marcia Spetch. *A Generative Computational Model for Human Hide and Seek Behavior*. In proceedings of the Seventh AAAI Conference on Artificial Intelligence and Interactive Digital Entertainment (AIIDE), pages 128-133. Stanford, California, October 2011. [ $34/48 = 70\%$ ]
- 2011 Nathan Sturtevant and Vadim Bulitko. *Learning where you are going and from whence you came: h- and g-cost learning in real-time heuristic search*. In proceedings of the 22nd International Joint Conference on Artificial Intelligence (IJCAI), pages 365-370. Barcelona, Spain, July 2011. [ $400/1325 = 30\%$ ]
- 2010 Ramon Lawrence and Vadim Bulitko. *Taking Learning out of Real-time Heuristic Search for Video-game Pathfinding*. In proceedings of the Twenty-Third Australasian Joint Conference on Artificial Intelligence. Adelaide, Australia, December 2010. Pages 405-414. [ $53/112 = 47\%$ ]
- 2010 David Thue and Vadim Bulitko and Marcia Spetch and Trevon Romanuik. *Player Agency and the Relevance of Decisions*. In proceedings of the Third International Conference on Interactive Digital Storytelling (ICIDS). Edinburgh, UK. November 2010. Pages 210-215. [ $25/54 = 46\%$ ]
- 2010 Greg Lee and Vadim Bulitko. *Automated Storytelling in Sports: A Rich Domain to be Explored*. In proceedings of the Third International Conference on Interactive Digital Storytelling (ICIDS). Edinburgh, UK. November 2010. Pages 252-255. [ $25/54 = 46\%$ ]
- 2010 David Thue and Vadim Bulitko and Marcia Spetch and Michael Webb. *Socially Consistent Characters in Player-Specific Stories*. In proceedings of the Artificial Intelligence and Interactive Digital Entertainment conference (AIIDE). Pages 198-203. [ $35/57 = 61\%$ ]
- 2010 Nathan Sturtevant and Vadim Bulitko and Yngvi Björnsson. *On Learning In Agent-Centered Search*. Proceedings of the 9th International Conference on Autonomous Agents and Multiagent Systems (AAMAS), Toronto, Canada. Pages 333-340. [ $163/685 = 24\%$ ]
- 2009 David Thue and Vadim Bulitko and Marcia Spetch and Michael Webb. *Exaggerated Claims for Interactive Stories*. In proceedings of the International Conference on Interactive Digital Storytelling (ICIDS). Guimarães, Portugal. Pages 179-184. [ $28/89 = 33\%$ ]
- 2009 Vadim Bulitko and Yngvi Björnsson. *kNN LR<sup>T</sup>A\*: Simple Subgoaling for Real-time Search*. In proceedings of the Artificial Intelligence and Interactive Digital Entertainment conference (AIIDE). Stanford, California. 2-7. [ $44\%$ ]
- 2009 Yngvi Björnsson and Vadim Bulitko and Nathan Sturtevant. *TBA\*: Time-Bounded A\**. In proceedings of the International Joint Conference on Artificial Intelligence (IJCAI). Pasadena, California. 431-436. [ $26\%$ ]
- 2008 Stephen Hladky and Vadim Bulitko. *An Evaluation of Models for Predicting Opponent Positions in First-Person Shooter Video Games*. In proceedings of IEEE Symposium on Computational Intelligence and Games (CIG), pages 39-46. Perth, Australia. [ $50\%$ ]
- 2008 David Thue and Vadim Bulitko and Marcia Spetch. *Making Stories Player-Specific: Delayed Authoring in Interactive Storytelling*. In proceedings of the First Joint International Conference on Interactive Digital Storytelling (ICIDS), pages 230-241. Erfurt, Germany. [ $30\%$ ]
- 2008 Alejandro Isaza and Jieshan Lu and Vadim Bulitko and Russell Greiner. *A Cover-Based Approach to Multi-Agent Moving Target Pursuit*. In proceedings of the Artificial Intelligence and Interactive Digital Entertainment conference (AIIDE), pages 54-59. Stanford, California. [ $40\%$ ]
- 2008 Vadim Bulitko and Steven Solomon and Jonathan Gratch and Michael van Lent. *Modeling Culturally and Emotionally Affected Behavior*. In proceedings of the Artificial Intelligence and Interactive Digital Entertainment conference (AIIDE), pages 10-15. Stanford, California. [ $40\%$ ]
- 2008 Alejandro Isaza and Csaba Szepesvári and Vadim Bulitko and Russell Greiner. *Speeding Up Planning in Markov Decision Processes via Automatically Constructed Abstractions*. In proceedings of the 24th Conference on Uncertainty in Artificial Intelligence (UAI), pages 306-314, Helsinki, Finland. [ $28\%$ ]
- 2007 Vadim Bulitko and Yngvi Björnsson and Mitja Luštrek and Jonathan Schaeffer and Sverrir Sigmundarson. *Dynamic Control in Path-Planning with Real-Time Heuristic Search*. In proceedings of the International Conference on Automated Planning and Scheduling (ICAPS), pages 49-56, Providence, Rhode Island. [ $32\%$ ]
- 2007 David Thue and Vadim Bulitko and Marcia Spetch and Eric Wasylishen. *Interactive Storytelling: A Player Modelling Approach*. In proceedings of the Artificial Intelligence and Interactive Digital Entertainment conference (AIIDE), pages 43-48, Stanford, California. [ $38\%$ ]



- 2007 Brian Tanner and Vadim Bulitko and Anna Koop and Cosmin Paduraru. *Grounding Abstractions in Predictive State Representations*. In proceedings of the International Joint Conference on Artificial Intelligence (IJCAI), pages 1077-1082, Hyderabad, India. [35%]
- 2007 D. Chris Rayner and Katherine Davison and Vadim Bulitko and Kenneth Anderson and Jieshan Lu. *Real-Time Heuristic Search with a Priority Queue*. In proceedings of the International Joint Conference on Artificial Intelligence (IJCAI), pages 2372-2377, Hyderabad, India. [35%]
- 2006 David Thue and Vadim Bulitko. *Modelling Goal-directed Players in Digital Games*. In proceedings of the Artificial Intelligence and Interactive Digital Entertainment conference (AIIDE), pages 86-91, Marina del Rey, California. [41%]
- 2006 Greg Lee and Vadim Bulitko. *Genetic Algorithms for Action Set Selection Across Domains: A Demonstration*. In proceedings of the Genetic and Evolutionary Computation Conference (GECCO), pages 1697-1704, Seattle, Washington. [46%]
- 2005 Vadim Bulitko and Nathan Sturtevant and Maryia Kazakevich. *Speeding Up Learning in Real-time Search via Automatic State Abstraction*. In proceedings of the National Conference on Artificial Intelligence (AAAI), pages 1349-1354. Pittsburgh, Pennsylvania. [18%]
- 2005 Greg Lee and Vadim Bulitko. *GAMM: Genetic Algorithms with Meta-Models for Vision*. In proceedings of the Genetic and Evolutionary Computation Conference (GECCO), pages 2029-2036. Washington, DC. [50%]
- 2005 Vadim Bulitko and David C. Wilkins. *Machine Learning for Time Interval Petri Nets*. Lecture Notes in Artificial Intelligence (LNAI), Proceedings of the 18th Australian Joint Conference on Artificial Intelligence, pages 959-965. Springer-Verlag, Sydney, Australia. [32%]
- 2004 Ilya Levner and Vadim Bulitko. *Machine Learning for Adaptive Image Interpretation*. In proceedings of the Innovative Applications of Artificial Intelligence Conference (IAAI), pages 870-876. San Jose, California. [37%]
- 2003 Ilya Levner and Vadim Bulitko and Lihong Li and Greg Lee and Russell Greiner. *Towards Automated Creation of Image Interpretation Systems*. In proceedings of the 16th Australian Joint Conference on Artificial Intelligence, pages 653-665. Perth, Australia. [45%]
- 2003 Vadim Bulitko and Lihong Li and Russell Greiner and Ilya Levner. *Lookahead Pathologies for Single Agent Search*. In proceedings of the International Joint Conference on Artificial Intelligence (IJCAI), pages 1531-1533. Acapulco, Mexico. [28%]
- 2002 Ilya Levner and Vadim Bulitko and Omid Madani and Russell Greiner. *Performance of Lookahead Control Policies in the face of Abstractions and Approximations*. Lecture Notes in Artificial Intelligence (LNAI), Proceedings of the 5th International Symposium on Abstraction, Reformulation and Approximation (SARA), pages 299-308. Springer-Verlag, Berlin, Heidelberg.
- 1999 Vadim Bulitko and David C. Wilkins. *Automated Instructor Assistant for Ship Damage Control*. In proceedings of the Innovative Applications of Artificial Intelligence Conference (IAAI), pages 778-785. Orlando, Florida. [~ 35%]

### Book chapters

- 2019 Sergio Poo Hernandez and Vadim Bulitko. *Artificial Intelligence for Managing the Interactive Ballet Video Game, iGiselle*. In N. Stovel (Ed.) *The Creation of iGiselle: Classical Ballet Meets Contemporary Video Games*. University of Alberta Press. ISBN-10: 1772123811, ISBN-13: 978-1772123814. 232 pages. <https://www.amazon.ca/Creation-iGiselle-Classical-Ballet-Contemporary/dp/1772123811>
- 2015 Vadim Bulitko and Greg Lee and Sergio Poo Hernandez and Alejandro Ramirez and David Thue. *Techniques for AI-driven Experience Management in Interactive Narratives*. In S. Rabin (Ed.) *Game AI Pro. Volume II*, pages 523 - 533.
- 2011 Vadim Bulitko and Yngvi Björnsson and Nathan Sturtevant and Ramon Lawrence. *Real-time Heuristic Search for Game Pathfinding*. In book: *Applied Research in Artificial Intelligence for Computer Games*. Springer USA. Pages 1-30.
- 2011 Mark Riedl and David Thue and Vadim Bulitko. *Game AI as Storytelling*. In book: *Applied Research in Artificial Intelligence for Computer Games*. Springer USA. Pages 125-150.

- 2008 David Thue and Vadim Bulitko and Marcia Spetch. *Player Modelling for Interactive Storytelling: A Practical Approach*. In S. Rabin (Ed.) *AI Game Programming Wisdom*, Charles River Media, Inc.: volume 4, pages 633-646.
- 2006 Ilya Levner and Vadim Bulitko and Guohui Lin. *Feature Extraction for Classification of Proteomic Mass Spectra: A Comparative Study*. In I. Guyon, S. Gunn, M. Nikravesh and L. Zadeh (Eds.) *Feature Extraction, Foundations and Applications: Series Studies in Fuzziness and Soft Computing*, Springer Berlin / Heidelberg, Volume 207, pages 607-624.

### Magazine articles

- 2013 Mark Riedl and Vadim Bulitko. *Interactive Narrative: An Intelligent Systems Approach*. *Artificial Intelligence magazine*. Volume 34, number 1. pages 67-77.
- 2012 Vadim Bulitko and Mark Riedl and Arnav Jhala and Michael Buro and Nathan Sturtevant. *Recap of the 2011 AI and Interactive Digital Entertainment Conference*. *Artificial Intelligence magazine*. Volume 33, Number 1, pages 51-54.
- 2011 G. Michael Youngblood and Vadim Bulitko and Ben Weber. *Recap of the 2010 AI and Interactive Digital Entertainment Conference*. *Artificial Intelligence magazine*. Volume 32, Number 2, pages 131-132.
- 2010 Vadim Bulitko and J. Christopher Beck. *SARA 2009: The Eighth Symposium on Abstraction, Reformulation and Approximation*. *Artificial Intelligence magazine*. Volume 31, Number 2, pages 95-96.
- 2008 Jonathan Schaeffer and Vadim Bulitko and Michael Buro. *Bots Get Smart*. *IEEE Spectrum magazine*. December, 44-49.
- 1992 Vadim Bulitko. *Pseudoparallel Program Execution on BK-0010*. *INFO*, volume 2.

### Conference/workshop/symposium papers/abstracts (lightly refereed or not refereed)

- 2018 Sergio Poo Hernandez and Vadim Bulitko and Astrid Ensslin and Tejasvi Goorimoorthee and Shelby Carleton. *Deep Learning for Classification of Speech Accents in Video Games*. Proceedings of the Experimental AI in Games (EXAG) Workshop at the AAAI Conference on Artificial Intelligence and Interactive Digital Entertainment (AIIDE).
- 2018 Vadim Bulitko and Mac Walters and Morgan Cselinacz and Matthew Brown. *Evolving NPC Behaviours in A-life with Player Proxies*. Proceedings of the Experimental AI in Games (EXAG) Workshop at the AAAI Conference on Artificial Intelligence and Interactive Digital Entertainment (AIIDE).
- 2018 Vadim Bulitko and Kacy Doucet and John Simpson and Aaryn Flynn. *A-life for Non-Playable Characters in Video Games*. Late-breaking Abstract at A-LIFE conference. Tokyo, Japan.
- 2018 Michael Frishkopf and Yourui Guo and Noah Weninger and Matt Kelley and Sergio Poo Hernandez and Vadim Bulitko. *Deep Learning for Sound Recognition*. Invited contribution to a roundtable at the annual meeting of the Society for Ethnomusicology. Albuquerque, NM.
- 2017 Vadim Bulitko. *Effects of Self-knowledge: Once Bitten Twice Shy*. Proceedings of the Experimental AI in Games (EXAG) Workshop at the AAAI Conference on Artificial Intelligence and Interactive Digital Entertainment (AIIDE). pages 7.
- 2017 Vadim Bulitko and Shelby Carleton and Delia Cormier and Devon Sigurdson and John Simpson. *Towards Positively Surprising Non-Player Characters in Video Games*. Proceedings of the Experimental AI in Games (EXAG) Workshop at the AAAI Conference on Artificial Intelligence and Interactive Digital Entertainment (AIIDE). pages 7.
- 2017 Astrid Ensslin and Tejasvi Goorimoorthee and Shelby Carleton and Vadim Bulitko and Sergio Poo Hernandez. *Deep Learning for Speech Accent Detection in Videogames*. Proceedings of the Experimental AI in Games (EXAG) Workshop at the AAAI Conference on Artificial Intelligence and Interactive Digital Entertainment (AIIDE). pages 4.
- 2014 Vadim Bulitko. *Flow for Meta Control*. Special Session on Artificial General Intelligence and Cognitive Science. The Seventh Conference on Artificial General Intelligence. 10 pages. Published on-line.
- 2014 Sarah Beck and Vadim Bulitko and Sergio Poo Hernandez and Emilie St.Hilaire and Nora Stovel and Laura Sydora. *Women with Wings: The Romantic Ballerina Then and Now*. Abstract in Proceedings of Grace Hopper Conference. Phoenix, Arizona.

- 2013 David Thue and Vadim Bulitko and Howard Hamilton. *Implementation Cost and Efficiency for AI Experience Managers*. In Proceedings of the Intelligent Narrative Technologies (INT) workshop of the AAAI Conference on Artificial Intelligence and Interactive Digital Entertainment (AIIDE). Boston, MA. October. Pages 4.
- 2013 Sergio Poo Hernandez and Vadim Bulitko. *A Call for Emotion Modeling in Interactive Storytelling*. In Proceedings of the Intelligent Narrative Technologies (INT) workshop of the AAAI Conference on Artificial Intelligence and Interactive Digital Entertainment (AIIDE). Boston, MA. October. Pages 4.
- 2012 David Thue and Vadim Bulitko. *Procedural Game Adaptation: Framing Experience Management as Changing an MDP*. In Proceedings of the Intelligent Narrative Technologies (INT) workshop of the AAAI Conference on Artificial Intelligence and Interactive Digital Entertainment (AIIDE). Stanford, CA. October. Pages 6.
- 2011 Daniel Huntley and Vadim Bulitko. *Extending the Applications of Recent Real-time Heuristic Search*. In proceedings of the National Conference on Artificial Intelligence (AAAI), Student Abstract and Poster track. San Francisco, California. Pages 1792-1793.
- 2008 Vadim Bulitko and Steven Solomon and Jonathan Gratch and Michael van Lent. *Modeling Culturally and Emotionally Affected Behavior*. In proceedings of the Tenth International Conference on the Simulation of Adaptive Behavior (SAB), Workshop on the role of emotion in adaptive behavior and cognitive robotics. Osaka, Japan. This is a shortened version of an AIIDE'08 publication by the same authors. Pages 10.
- 2008 David Thue and Vadim Bulitko and Marcia Spetch. *Simulating the Adaptive Behaviour of Storytellers in Computer Video Games*. In proceedings of the Tenth International Conference on the Simulation of Adaptive Behavior (SAB), Last Minute Results track. Osaka, Japan. Pages 2.
- 2008 Mitja Luštrek and Vadim Bulitko. *Thinking Too Much: Pathology in Pathfinding*. In proceedings of the 18th European Conference on Artificial Intelligence (ECAI), pages 899-900. Patras, Greece.
- 2008 David Thue and Vadim Bulitko and Marcia Spetch. *PaSSAGE: A Demonstration of Player Modelling in Interactive Storytelling*. In proceedings of the Fourth Conference on Artificial Intelligence and Interactive Digital Entertainment. AAAI Press. Stanford, California, USA, pages 226-227.
- 2007 David Thue and Vadim Bulitko and Marcia Spetch and Eric Wasylishen. *Learning Player Preferences to Inform Delayed Authoring*. In proceedings of the AAAI Fall Symposium on Intelligent Narrative Technologies, volume Volume FS-07-05, pages 158-161. Arlington, Virginia.
- 2004 Greg Lee and Vadim Bulitko and Ilya Levner. *Automated Selection of Vision Operator Libraries with Evolutionary Algorithms*. In proceedings of the Congress on Evolutionary Computing (CEC), pages 1127-1134. Portland, Oregon.
- 2003 Ilya Levner and Vadim Bulitko and Lihong Li and Greg Lee and Russell Greiner. *Automated Feature Extraction for Object Recognition*. In proceedings of the Image and Vision Computing New Zealand conference (IVCNZ), pages 309-313. Palmerston North, New Zealand.
- 2003 Ilya Levner and Vadim Bulitko and Lihong Li and Greg Lee and Russell Greiner. *Learning Robust Object Recognition Strategies*. In proceedings of the 8th Australian and New Zealand Conference on Intelligent Information Systems (ANZIIS), pages 489-494. Sydney, Australia.
- 2003 Lihong Li and Vadim Bulitko and Russell Greiner and Ilya Levner. *Improving an Adaptive Image Interpretation System by Leveraging*. In proceedings of the 8th Australian and New Zealand Conference on Intelligent Information Systems (ANZIIS), pages 501-506. Sydney, Australia.
- 2003 Vadim Bulitko. *Lookahead Pathologies and Meta-level Control in Real-time Heuristic Search*. In proceedings of the 15th Euromicro Conference on Real-Time Systems, pages 13-16. Porto, Portugal.
- 2000 Gunnar Schrah and Oleksandr Chernyshenko and Michael Baumann and Janet Sniezek and Vadim Bulitko and Scott Borton and David C. Wilkins. *A New Approach to Scoring Dynamic Decision Making Performance on High Fidelity Simulators: Reliability and Validity Issues*. In proceedings of the 15th Annual Conference for the Society for Industrial and Organizational Psychology. New Orleans, Louisiana.
- 1993 Vadim Bulitko. *On Recursive Function Classes Including All Fixed Points*. In proceedings of the Odessa State University Student Conference. Odessa, Ukraine.
- 1992 Vadim Bulitko. *A New Method of Constructing Hyper-simple Sets*. In proceedings of the Ukrainian National Scientific Conference. Odessa, Ukraine.

### Invited Journal Articles (not peer-reviewed)

- 2016 Vadim Bulitko and David Thue. *A Call for Flow Modeling in Interactive Storytelling*. Advances in Cognitive Systems, Cognitive Systems Foundation, volume 4, 25–34.

### Technical Reports (not refereed)

- 2015 Vadim Bulitko and Jessica Hong and Kumar Kumaran and Ivan Swedberg and William Thoang and Patrick von Hauff and Georg Schmölzer. *RETAIN: a Neonatal Resuscitation Trainer Built in an Undergraduate Video-Game Class*. arXiv:1507.00956 [cs.CY].
- 2014 Vadim Bulitko. *Flow for Meta Control*. arXiv:1407.4709 [cs.AI].
- 2013 Daniel Huntley and Vadim Bulitko. *Search-Space Characterization for Real-time Heuristic Search*. arXiv:1308.3309 [cs.AI].
- 2009 Valeriy K. Bulitko and Vadim Bulitko. *On Backtracking in Real-time Heuristic Search*. arXiv:0912.3228 [cs.AI].
- 2004 Vadim Bulitko. *Learning for Adaptive Real-time Search*. arXiv:cs/0407016 [cs.AI].
- 2000 Vadim Bulitko. *Oracle Complexity and Nontransitivity in Pattern Recognition*. arXiv:cs/0010023 [cs.CC].

### Demonstrations

- 2015 Michael Cook and Squirrel Eiserloh and Justus Robertson and R. Michael Young and Tommy Thompson and David Churchill and Martin Cerny and Sergio Poo Hernandez and Vadim Bulitko. *Playable Experiences at AIIDE 2015*. In the Playable Experience track at the Eleventh AAAI Conference on Artificial Intelligence and Interactive Digital Entertainment (AIIDE), pages 227-231.
- 2014 Alejandro Ramirez and Vadim Bulitko. *Player-specific Automated Storytelling*. In the Playable Experience track at the Tenth AAAI Conference on Artificial Intelligence and Interactive Digital Entertainment (AIIDE), pages 206-207.
- 2008 David Thue and Vadim Bulitko and Marcia Spetch. *PaSSAGE: A Demonstration of Player Modelling in Interactive Storytelling*. In the Playable Experience track at the Fourth AAAI Conference on Artificial Intelligence and Interactive Digital Entertainment (AIIDE).

### Dissertations

- 2000 Vadim Bulitko. *Envisionment-based Scheduling Using Time Interval Petri Networks: Representation, Inference, and Learning*. Ph.D. dissertation. University of Illinois at Urbana-Champaign. Pages 338.
- 1998 Vadim Bulitko. *Minerva-5: A Multifunctional Dynamic Expert System*. M.Sc. dissertation. University of Illinois at Urbana-Champaign. Pages 190.

### Editorial

- 2011 Vadim Bulitko and Mark Riedl (editors). *Proceedings of the Seventh AAAI Conference on Artificial Intelligence and Interactive Digital Entertainment (AIIDE)*. AAAI Press. Stanford, California. Pages 240.
- 2010 G. Michael Youngblood and Vadim Bulitko (editors). *Proceedings of the Sixth AAAI Conference on Artificial Intelligence and Interactive Digital Entertainment (AIIDE)*. AAAI Press. Stanford, California. Pages 227.
- 2009 Vadim Bulitko and J. Christopher Beck (editors). *Proceedings of the Eight Symposium on Abstraction, Reformulation, and Approximation (SARA)*. AAAI Press. Lake Arrowhead, California. Pages 200.
- 2005 Vadim Bulitko and Sven Koenig (editors). *Proceedings of the Workshop on Planning and Learning in A Priori Unknown or Dynamic Domains at the International Joint Conference on Artificial Intelligence (IJCAI)*. Edinburgh, Scotland. Pages 162.

### Theses by my students

- 2018 Rameel Sethi. *A Framework for Synthesis of Musical Training Examples for Polyphonic Instrument Recognition*. M.Sc. thesis. Department of Computing Science. University of Alberta. Edmonton, Alberta.
- 2018 Devon Sigurdson. *Automatic Algorithm Selection in Videogame Pathfinding*. M.Sc. thesis. Department of Computing Science. University of Alberta. Edmonton, Alberta.
- 2015 Sergio Poo Hernandez. *Keeping PACE: Appraising Emotions to Enhance Gaming Experience*. M.Sc. thesis. Department of Computing Science. University of Alberta. Edmonton, Alberta.
- 2015 Yathirajan Brammadesam Manavalan. *A Light-weight Emotion Model for Non-Player Characters in a Video Game*. M.Sc. thesis. Department of Computing Science. University of Alberta. Edmonton, Alberta.

- 2015 Thórey Mariúsdóttir. *Flow as a Metacontrol for AI Agents*. M.Sc. thesis. Department of Computing Science. University of Alberta. Edmonton, Alberta.
- 2015 David Thue. *Generalized Experience Management*. Ph.D. thesis. Department of Computing Science. University of Alberta. Edmonton, Alberta. [Nominated for the departmental thesis award.]
- 2013 Alejandro Ramirez. *Automated Planning and Player Modelling for Interactive Storytelling*. M.Sc. thesis. Department of Computing Science. University of Alberta. Edmonton, Alberta.
- 2012 Greg Lee. *Automated Story-based Commentary for Sports*. Ph.D. thesis. Department of Computing Science. University of Alberta. Edmonton, Alberta.
- 2011 Andrew Cenknier. *Passing a Hide and Seek Turing Test*. M.Sc. thesis. Department of Computing Science. University of Alberta. Edmonton, Alberta.
- 2011 Daniel Huntley. *Performance Analysis of Recent Real-time Heuristic Search Through Search-Space Characterization*. M.Sc. thesis. Department of Computing Science. University of Alberta. Edmonton, Alberta.
- 2009 Stephen Hladky. *Predicting Opponent Locations in First-Person Shooter Video Games*. M.Sc. thesis. Department of Computing Science. University of Alberta. Edmonton, Alberta. [Nominated for the departmental thesis award.]
- 2009 Jieshan Lu. *Learning Multi-agent Pursuit of a Moving Target*. M.Sc. thesis. Department of Computing Science. University of Alberta. Edmonton, Alberta.
- 2008 D. Chris Rayner. *Analysing Openings in Tactical Simulations*. M.Sc. thesis. Department of Computing Science. University of Alberta. Edmonton, Alberta.
- 2007 David Thue. *Player-informed Interactive Storytelling*. M.Sc. thesis. Department of Computing Science. University of Alberta. Edmonton, Alberta. [Nominated for the departmental thesis award.]
- 2006 Cosmin Paduraru. *Planning with Approximate and Learned Models of Markov Decision Processes*. M.Sc. thesis. Department of Computing Science. University of Alberta. Edmonton, Alberta.
- 2004 Lihong Li. *Focus of Attention in Reinforcement Learning*. M.Sc. thesis. Department of Computing Science. University of Alberta. Edmonton, Alberta.
- 2004 Greg Lee. *Automated Action Set Selection in Markov Decision Processes*. M.Sc. thesis. Department of Computing Science. University of Alberta. Edmonton, Alberta.
- 2003 Ilya Levner. *Multi-resolution Adaptive Object Recognition: A Step Towards Autonomous Vision Systems*. M.Sc. thesis. Department of Computing Science. University of Alberta. Edmonton, Alberta.

### Media/industry reports on our work

- May 31, 18 Sofia Osbourne. *The art of artificial intelligence*. 2018 Spring Contours, Faculty of Science, University of Alberta.
- May 1, 18 Hamdi Issawi. *U of A class hands students the controls as video game developers*. The Star Edmonton.
- Apr 11, 18 Therese Kehler. *These are not your average rabbits*. New Trail Spring 2018, University of Alberta.
- Feb 23, 18 Jennifer Pascoe. *Moving beyond intelligent assistants?* Faculty of Science News, University of Alberta.
- May 4, 17 Erik Einsiedel. *Creating the Game*. Curious Arts. University of Alberta.
- Apr 28, 17 Peter Watts. *Radio interview about CMPUT 250*. News Talk 770 Radio. Calgary, Alberta.
- Apr 27, 17 Katie Willis. *Technology meets artistry at video game development awards 2017*. Faculty of Science News, University of Alberta.
- Oct 26, 16 Keith Stuart. *Has a Black Mirror episode predicted the future of video games?* The Guardian.
- Mar 17, 16 Chris Higgins. *Will humans lose out to AI in eSports too?* eSports. Redbull.com.
- Nov 18, 15 Jennifer Pascoe. *Video Game Trainer Built to Save Lives in the Delivery Room*. Science Contours, Volume 32, Number 2. University of Alberta.
- Oct 8, 15 Nella Callihoo. *REsuscitation TrAining for neonatal residents not just a game*. Uplifting the Whole People – Legislative Newsletter, University of Alberta.
- Sep 30, 15 Andrea Ross. *Video game training developed by U of A students teaches people how to resuscitate newborns*. Metro News Edmonton.
- Sep 29, 15 Kate McInnes. *Video game developed at U of A could be a life-saver*. The Gateway.

- Sep 17, 15 Madeleine Cummings. *University of Alberta students develop video game training aid for neonatal physicians*. Edmonton Journal.
- Sep 17, 15 Kevin Maimann. *Edmonton students develop video game that can save lives*. Edmonton, Calgary and Winnipeg Sun.
- Sep 17, 15 Ashley Molnar. *Video game helps with neonatal care*. CTV News, Edmonton.
- Sep 17, 15 Su-ling Goh. *Video game trains health professionals to revive newborn babies*. Global News, Edmonton.
- Sep 17, 15 Jennifer Pascoe and Ross Neitz. *Neonatal resuscitation trainer RETAIN built in undergraduate computer gaming class*. Faculty of Medicine and Dentistry News, University of Alberta.
- Sep 17, 15 Jennifer Pascoe. *Neonatal resuscitation trainer RETAIN built in undergraduate computer gaming class*. Faculty of Science News, University of Alberta.
- Apr 27, 15 Brian Perry. *Interview with Vadim Bulitko*. Project Spark blog, Microsoft.
- Feb 1, 15 Karen White. *Tragedy Averted in iGiselle Video Game*. Dance Studio Life magazine.
- May 19, 14 Shandi Shiach. *Classic romantic ballet recreated in video game form*. The Gateway, University of Alberta.
- May 1, 14 Doug Johnson. *CMPUT 250 brings different University of Alberta faculties together to create video games*. Edmonton Examiner.
- Apr 25, 14 Conal Pierce. *It takes a village to make the game*. BioWare community blog.
- Apr 25, 14 Laura Ly. *Computer game awards showcase students' combined talents*. University of Alberta News.
- Apr 25, 14 Trevor Robb. *Top of their game*. Edmonton Sun.
- Mar 27, 14 Stephanie Dubois. *University of Alberta created video game focuses on Romantic ballet Giselle*. Metro News Edmonton.
- Mar 21, 14 Geoff McMaster. *Video game allows player to rewrite tragic demise of ballet heroine*. University of Alberta Folio.
- Mar 9-15, 14 Sarah Hoyles. *Ballet Video Game*. CKUA ArtBeat.
- May 3, 13 Shanda Wood. *The 5th Annual CMPUT 250 Game Development Awards*. BioWare community blog.
- Apr 24, 13 Matt Dykstra. *Students from University of Alberta honoured for video game projects*. Edmonton Sun.
- Nov 9, 12 Greg Lee interviewed by Patrick Skahill. *Computer Programmer Aims to Help Sports Broadcasters*. WNPR Connecticut.
- Oct 27, 12 Greg Lee interviewed by Nora Young. *AI Sports Commentating*. CBC Radio Spark Episode 194. New machine will deliver sports anecdotes. DN.se Sport.
- Oct 8, 12 Stanislav Mihulka. *Virtual sports commentator for tomorrow*. Object Source E-Learning.
- Oct 8, 12 Douglas Heaven. *AI sports commentator knows all the best stories*. New Scientist.
- Oct 6, 12 James Trew. *Alt-week 10.6.12: supercomputers on the moon, hear the Earth sing and the future of sports commentary*. Engadget.
- Oct 5, 12 Chris Welch. *Artificial intelligence hopes to give sports commentators an assist*. The Verge.
- Jul 15, 12 Andrew Katz. *Never loose your wallet again!* Men's Health.
- Jul 2, 12 Meghan Holohan. *Where to hide your wallet so that you can find it later*. MSNBC.
- Jun 4, 12 Shlomo Sprung. *A popular kids game could be used to figure out where terrorists hide bombs*. Business Insider.
- Jun 1, 12 Charles Choi. *Hide-and-seek goes virtual*. Science NOW.
- May 15, 12 Ross Pomeroy. *Scientists study how humans hide and seek*. Real Clear Science.
- May 4, 12 *The 4th annual CMPUT 250 Game Development Awards*. BioWare Blog.
- Apr 26, 12 *UofA computer games*. Breakfast Television, City TV.
- Apr 26, 12 Kevin Maimann. *U of A gamers win Milestone's game of the year*. 24 Hours Edmonton.
- Apr 25, 12 Kevin Maimann. *Local gamers win award*. Edmonton Sun.
- Apr 25, 12 Brian Murphy. *Student video game developers show their stuff*. University of Alberta News and Events.
- Apr 21, 11 Shelley Williamson. *U of A crowns gurus of game design*. Metro Edmonton.
- Apr 8, 11 Scott Rollans. *U of A gamers take to the red carpet*. Folio.
- Apr 2, 11 Scott Rollans. *Gamers take centre stage at gala*. U of A Faculty of Science News.

- Sep 10, 09 Sean Steels. *Researchers probe human mind to unlock A.I.* The Gateway, University of Alberta.
- Sep 10, 09 *Child's play may revolutionize video gaming, police work.* ScienceBlog.
- Sep 2, 09 *Child's play may revolutionize video gaming, police work.* Breaking News 24/7.
- Sep 2, 09 *Hide-'n-seek reveals tricks video game makers might use.* LiveScience.
- Sep 2, 09 *Child's play may revolutionize video gaming, police work.* ScienceDaily.
- Sep 2, 09 *Reasoning behind hide and seek to revolutionise video gaming, police work.* Gadgetophilia.
- Sep 2, 09 *Researchers Use Hide-And-Seek To Study Reasoning, Decision-Making.* All Headline News.
- Sep 1, 09 BJS. *Child's play may revolutionize video gaming, police work.* ScienceNews
- Sep 1, 09 Anna Błońska. *Pouczająca zabawa w chowanego.* KopalniaWiedzy.pl.
- Sep 1, 09 David Wylie. *'Hide-and-seek' software could train people to snoop.* Canwest News Service.
- Aug 28, 09 *Child's play may revolutionize video gaming, police work.* PhysOrg.com.
- Aug 28, 09 Jamie Hanlon. *Child's play may revolutionize video gaming, police work.* Express News, University of Alberta.

## Presentations

- Nov 22, 18 *A-life and Video Games.* CMPUT 250 guest lecture. University of Alberta. Edmonton, Alberta.
- Nov 14, 18 *Evolving NPC Behaviours in A-life with Player Proxies.* AIIDE Workshop on Experimental AI in Games. Edmonton, Alberta.
- Oct 25, 18 *History of Video Games and Video-game Technology.* CMPUT 250 guest lecture. University of Alberta. Edmonton, Alberta.
- Oct 5, 18 *Artificial General Intelligence via A-life.* CogSem, Department of Psychology. University of Alberta. Edmonton, Alberta.
- Sep 28, 18 *Emergence of Music & Sound in Artificial Life.* Sound Studies Institute. University of Alberta. Edmonton, AB.
- Sep 10, 18 *Artificial General Intelligence & Artificial Life.* Department of Computer Science. University of Victoria. Victoria, BC.
- Jul 17, 18 *Deep Learning, Artificial Evolution and Novel AI Behaviors.* DeepMind. London, UK.
- Jul 14, 18 *Algorithm Selection in Multi-agent Pathfinding.* Symposium on Combinatorial Search (SoCS) poster presentation. Stockholm, Sweden.
- Jul 10, 18 *Deep Learning, Artificial Evolution and Novel AI Behaviors.* Artificial Intelligence Seminar, Department of Computing Science, University of Alberta.
- Jun 4, 18 *A-life for Artificial General Intelligence.* Polymorphic Games, University of Idaho. Moscow, Idaho
- Jun 1, 18 *Deep Learning, Artificial Evolution and Novel AI Behaviors.* Information Services & Technology, University of Alberta.
- Apr 16, 18 *Deep Learning, Artificial Evolution and Novel AI Behaviors.* Paris Machine Learning Meetup. Paris, France.
- Mar 2, 18 *AI-driven Experience Management for Fun and Training.* CLIT 210, University of Alberta.
- Feb 28, 18 *Deep Learning, Artificial Evolution and Novel AI Behaviors.* Leonardo Art Science Evening Rendezvous, Edmonton, Alberta.
- Jan 25, 18 *Towards Novel Behavior in Evolving AI Agents.* Poster presentation and a demo at Dark Matters: Game On. Telus World of Science. Edmonton, Alberta.
- Nov 7, 17 *Evolution of AI Agents.* INTD 240, University of Alberta.
- Nov 3, 17 *Towards Procedurally Generating Interesting NPCs.* BioWare, Edmonton, Alberta.
- Oct 20, 17 *AI for Experience Management.* HUCO 617, University of Alberta.
- Oct 8, 17 *Robustness of Real-time Heuristic Search Algorithms to Read/Write Error in Externally Stored Heuristics.* AIIDE poster presentation. Snowbird, Utah.
- Oct 6, 17 *Towards Positively Surprising AI Characters.* AIIDE Workshop on Experimental AI in Games. Snowbird, Utah.
- Oct 5, 17 *Effects of Self-knowledge: Once Bitten Twice Shy.* AIIDE Workshop on Experimental AI in Games. Snowbird, Utah.
- Sep 22, 17 *Towards Positively Surprising AI Characters.* CogSem, Department of Psychology. University of Alberta. Edmonton, Alberta.

- May 18, 17 *AI-driven Experience Management for Fun and Training*. Digital Narratives Around the World. KIAS Symposium. University of Alberta. Edmonton, Alberta.
- Mar 17, 17 *Navigation and search behaviour in Sonoran desert ants*. CogSem, Department of Psychology. University of Alberta. Edmonton, Alberta.
- Nov 16, 16 *AI for Experience Management*. HUCO 617, University of Alberta.
- Nov 2, 16 *Flow*. RLAI, University of Alberta.
- Nov 1, 16 *AI for Experience Management*. EDPY 597, University of Alberta.
- Nov 1, 16 *AI for Experience Management*. EDIT 486, University of Alberta.
- Oct 12, 16 *Searching for Real-time Search Algorithms: An Open Challenge*. Carnegie Mellon University, Silicon Valley Campus. Moffett Field, California.
- Oct 11, 16 *Per-map Algorithm Selection in Real-time Heuristic Search*. AIIDE 2016 poster presentation. Burlingame, California.
- May 20, 16 *AI-driven Experience Management for Fun and Training*. Department of Computer Science. University of British Columbia. Vancouver, British Columbia.
- May 19, 16 *AI-driven Experience Management for Fun and Training*. Department of Computer Science. University of Victoria. Victoria, British Columbia.
- Apr 26, 16 *Searching for Real-time Search Algorithms*. Heuristic Search Seminar, Department of Computing Science. University of Alberta. Edmonton, Alberta.
- Nov 23, 15 *AI-driven Experience Management for Fun and Training*. Carnegie Mellon University, Silicon Valley Campus. Moffett Field, California.
- Nov 17, 15 *Maximizing Flow as a Metacontrol in Angband*. AIIDE 2015 poster presentation. Santa Cruz, California.
- Nov 9, 15 *A Computational Model of Emotions and Actions*. University of California Santa Cruz.
- Oct 19, 15 *ACORE: A Lightweight Computational Emotion Model*. University of California Santa Cruz.
- Oct 6, 15 *Recent Work in Real-time Heuristic Search*. Heuristic Search Seminar, Department of Computing Science. University of Alberta. Edmonton, Alberta.
- May 28, 15 *A Call for Flow Modeling in Interactive Storytelling*. CMN Workshop. Atlanta, Georgia.
- Mar 26, 15 *Flow Modeling for AI-managed Interactive Storytelling*. CSGSA Academic and Industry Mixer, Department of Computing Science. University of Alberta. Edmonton, Alberta.
- Mar 17, 15 *Enjoying The Search*. Heuristic Search Seminar, Department of Computing Science. University of Alberta. Edmonton, Alberta.
- Feb 5, 15 *Interactive Storytelling, Artificial Intelligence and iGiselle*. Invited talk at Arts-based Research Studio, Department of Secondary Education. University of Alberta. Edmonton, Alberta.
- Jan 16, 15 *Computational Models of Flow*. Invited talk at CogSem, Department of Psychology. University of Alberta. Edmonton, Alberta.
- Oct 24, 14 *iGiselle: Modeling Player's Emotions for Interactive Storytelling*. Interdisciplinary Colloquium. University of Alberta, Edmonton, Alberta.
- Oct 8, 14 *From Human Writers to AI Experience Managers*. Liquid Narrative Group. North Carolina State University. Raleigh, North Carolina.
- Oct 6, 14 *PAST: Player-Specific Automated Storytelling*. A playable experience spotlight presentation at the AAAI conference on AI and Interactive Digital Entertainment (AIIDE). Raleigh, North Carolina.
- Oct 6, 14 *Emotion-based Interactive Storytelling with AI*. A poster spotlight presentation at the AAAI conference on AI and Interactive Digital Entertainment (AIIDE). Raleigh, North Carolina.
- Sep 29, 14 *Managing Interactive Experience with Artificial Intelligence*. Invited talk for Computational Media and Design program. University of Calgary. Alberta.
- Sep 12, 14 *Interactive Storytelling for Fun and Training*. Invited talk at CogSem, Department of Psychology. University of Alberta. Edmonton, Alberta.
- Aug 23, 14 *AI-based Interactive Experience Management*. Invited keynote at Replaying Japan conference. University of Alberta. Edmonton, Alberta.



- Aug 4, 14 *Flow for Meta Control*. Special Session on Artificial General Intelligence and Cognitive Science. AGI 2014. Quebec City, Quebec.
- Jul 23, 14 *Flow for Meta Control*. University of Alberta. Edmonton, Alberta.
- Apr 7, 14 *AI-based Interactive Experience Management*. GRAND workshop invited talk. University of Alberta. Edmonton, Alberta.
- Nov 30, 13 *Experience Management with Artificial Intelligence*. DiscoverE Open House. University of Alberta. Edmonton, Alberta.
- Nov 8, 13 *iGiselle*. University of Alberta Interactives. Edmonton, Alberta.
- Oct 18, 13 *Experience Management with Artificial Intelligence*. Lockheed Martin. Boston, Massachusetts.
- Oct 15, 13 *Experience Management with Artificial Intelligence*. MIT Media Lab. Boston, Massachusetts.
- Jul 22, 13 *Flow and Reinforcement Learning*. University of Alberta. Edmonton, Alberta.
- May 6, 13 *Learning Player Preferences for Better Interactive Stories*. University of Alberta International. Edmonton, Alberta.
- May 3, 13 *Learning Player Preferences for Better Interactive Stories*. University of Alberta Liberal Arts Day. Edmonton, Alberta.
- Apr 3, 13 *Learning Player Preferences for Better Interactive Stories*. University of Alberta Interactives. Edmonton, Alberta.
- Jan 22, 13 *Discovery Panel on Games, Machines, and Artificial Intelligence*. University of Alberta. Edmonton, Alberta.
- Dec 8, 12 *Flow Maximization for Optimizing Performance*. The First Annual Conference on Advances in Cognitive Systems. Palo Alto, California.
- Oct 11, 12 *On Case Base Formation in Real-time Heuristic Search*. The 8th AAAI Conference on Artificial Intelligence and Interactive Digital Entertainment. Stanford, California.
- Oct 10, 12 *Automated Story-based Commentary for Sports*. The 8th AAAI Conference on Artificial Intelligence and Interactive Digital Entertainment. Stanford, California.
- Feb 27, 12 *Fast Pathfinding through Subgoaling*. BioWare. Edmonton, Alberta.
- Feb 2, 12 *Building and Evaluating an AI Game Master*. Thompson Rivers University. Kamloops, British Columbia.
- Dec 2, 11 *Building and Evaluating an AI Game Master*. University of British Columbia Okanagan. Kelowna, British Columbia.
- Dec 1, 11 *Subgoaling in Real-time Heuristic Search*. University of British Columbia Okanagan. Kelowna, British Columbia.
- Nov 23, 11 *Subgoaling in Real-time Heuristic Search*. University of Alberta. Edmonton, Alberta.
- Nov 19, 11 *Building and Evaluating an AI Game Master*. Pure Speculation conference invited talk. Edmonton, Alberta.
- Nov 18, 11 *Building and Evaluating an AI Game Master*. University of Alberta. Edmonton, Alberta.
- Jun 17, 11 *CMPUT 250: Computers and Games*. STLHE 11. Saskatoon, Saskatchewan.
- Nov 3, 10 *Player Agency and the Relevance of Decisions*. The Third International Conference on Interactive Digital Storytelling. Edinburgh, Scotland.
- Oct 14, 10 *Agency for Everyone: A New Focus for the PaSSAGE Project*. UC Santa Cruz. Santa Cruz, California.
- Apr 1, 10 *Impressions of GDC 10*. University of Alberta. Edmonton, Alberta.
- Oct 15, 09 *kNN LRTA\*: Simple Subgoaling for Real-time Search*. The Fifth Artificial Intelligence for Interactive Digital Entertainment Conference. Stanford, California.
- Aug 3, 09 *PaSSAGE: Past, Present, and the Road Ahead*. Google, Mountain View, California.
- Jul 31, 09 *PaSSAGE: Past, Present, and the Road Ahead*. Disney Imagineering, Glendale, California.
- Jul 20, 09 *How to Avoid Learning*. University of Alberta. Edmonton, Alberta.
- May 8, 09 *Computers and Games*. Inaugural "Wired Campus Alberta" broadcast to nine Alberta high schools. Edmonton, Alberta.
- Nov 15, 08 *PaSSAGE: Past, Present, and the Road Ahead*. Reykjavik University. Reykjavik, Iceland.
- Nov 12, 08 *PaSSAGE: Past, Present, and the Road Ahead*. Crowd Control Productions. Reykjavik, Iceland.

- Oct 22, 08 *Modeling Culturally and Emotionally Affected Behavior*. The fourth AAAI Conference on Artificial Intelligence and Interactive Digital Entertainment. Stanford, California.
- Oct 16, 08 *Modeling Culturally and Emotionally Affected Behavior*. Reykjavik University. Reykjavik, Iceland.
- Sep 3, 08 *Dynamic Control in Real-Time Heuristic Search*. Reykjavik University. Reykjavik, Iceland.
- Jul 29, 08 *Modeling Culturally and Emotionally Affected Behavior*. University of British Columbia Okanagan. Kelowna, British Columbia.
- Jul 28, 08 *Dynamic Control in Real-Time Heuristic Search*. University of British Columbia Okanagan. Kelowna, British Columbia.
- Jul 18, 08 *Dynamic Control in Real-Time Heuristic Search*. Nara Institute of Science and Technology (NAIST). Nara, Japan.
- Jul 16, 08 *Dynamic Control in Real-Time Heuristic Search*. Future University. Hakodate, Japan.
- Jul 11, 08 *Modeling Culturally and Emotionally Affected Behavior*. Workshop at 10th International Conference on Simulation of Adaptive Behavior. Osaka, Japan.
- Jul 7, 08 *Simulating the Adaptive Behaviour of Storytellers in Computer Video Games*. The 10th International Conference on Simulation of Adaptive Behavior. Osaka, Japan.
- Aug 23, 07 *Culturally Affected Behavior (CAB) and Culture, EMotion and Adaptation (CEMA)*. USC Institute for Creative Technologies (ICT). Marina del Rey, California.
- Jul 21, 07 *State Abstraction in Real-time Heuristic Search*. Invited talk at the Seventh International Symposium on Abstraction, Refinement, and Approximation (SARA). Whistler, British Columbia.
- Jun 1, 07 *State Abstraction in Learning Real-time Heuristic Search*. Stanford University, California.
- Jul 26, 06 *Machine Learning for Pursuit in Computer Games*. Université de Montréal, Montreal, Quebec.
- Jul 25, 06 *Learning to Pursue*. McGill University, Montreal, Quebec.
- Jun 20, 06 *Real-time Search and Learning*. Institute for Creative Technologies (ICT), Marina del Rey, California.
- Jun 9, 06 *Real-time Search in Game-like Environments*. Bioware Corp. Edmonton, Alberta.
- Jun 7, 06 *Target Modeling in Real-time Moving Target Pursuit*. Reykjavik University. Reykjavik, Iceland.
- May 19, 06 *Real-time Learning and Search*. University of British Columbia, Vancouver, British Columbia.
- May 18, 06 *Machine Learning for Computer Vision*. University of British Columbia, Vancouver, British Columbia.
- Aug 25, 05 *Recent Developments in Learning Real-time Search and Their Applications to Real-time Path-finding*. Institut d'Investigació en Intel·ligència Artificial, Bellaterra, Spain.
- Feb 22, 05 *Automated Instructor Assistant for Ship Damage Control*. Institute for Creative Technologies (ICT), Marina del Rey, California.
- Feb 05 *Speeding Up Learning via Abstraction*. Institute for Creative Technologies (ICT), Marina del Rey; University of California Berkeley, Berkeley; University of California, Los Angeles (UCLA); Information Science Institute (ISI), Marina del Rey; University of Southern California (USC), Los Angeles, California.
- Aug 27, 04 *Machine Learning for Adaptive Vision*. National Aeronautics and Space Administration (NASA), Moffett Field, California.
- Aug 26, 03 *Lookahead Pathologies and Meta Reasoning in Real-time Decision Making*. University of Southern California (USC), Los Angeles, California.

## Funding

### Research

18	<b>KIAS Research Team Grant</b>	\$7,477   co-PI
17-19	<b>SSHRC Insight Development Grant</b>	\$44,843   collaborator
17-19	<b>KIAS Research Cluster Grant</b>	\$55,000   co-applicant
14-18	<b>NSERC discovery grant</b>	\$39,000/year   solo applicant
13-14	<b>KIAS Research Cluster Grant</b>	\$20,000   collaborator
09-13	<b>NSERC discovery grant</b>	\$35,000/year   solo applicant
05	<b>UofA international work study program grant</b>	\$2,448   solo applicant

04-08	<b>NSERC discovery grant</b>	\$15,000/year   solo applicant
04	<b>NSERC research tools &amp; instruments grant</b>	\$8,397   solo applicant
02-03	<b>NSERC discovery grant</b>	\$10,000/year   solo applicant
02	<b>UofA summer temporary employment program grant</b>	\$2,082   solo applicant
01-03	<b>UofA start-up grant</b>	\$26,667/year   solo applicant
	<b>Teaching</b>	
16, 17	<b>BioWare</b>	\$10,000/year   solo applicant
11, 13, 14	<b>BioWare</b>	\$2,000/year   solo applicant

## Awards

18	Faculty of Science Students' Choice Honor Roll
11	Alan Blizzard Award, Second Place
10, 11	AAAI Certificate of Appreciation
06, 07, 10	"Top echelon teacher" mention by Faculty of Science Dean, University of Alberta
99	IAAI Innovative Application Award by AAI

## Collaboration

- 18-on **Polymorphic Games, University of Idaho, Moscow, Idaho.**  
Exploring AI/ML in games.
- 17-on **Humanities Computing, University of Alberta, Edmonton, Alberta.**  
Developing and applying Deep Learning to speech accent identification.
- 17-on **Department of Fine Arts, University of Alberta, Edmonton, Alberta.**  
Collaborating on LASERAlberta and EVE2050 projects.
- 17-on **Compute Canada, University of Alberta, Edmonton, Alberta.**  
AI for A-life-style agents.
- 17 **Department of Chemistry, University of Alberta, Edmonton, Alberta.**  
Developing a community service learning project for an undergraduate class.
- 17-on **BioWare/EA, Edmonton, Alberta.**  
Exploring AI/ML in games.
- 17 **TrajectoryIQ, Edmonton, Alberta.**  
Developing a community service learning project for an undergraduate class.
- 16-on **Department of Biological Sciences, University of Alberta, Edmonton, Alberta.**  
Developing and applying Deep Learning to bioacoustic data for species identification and biodiversity studies.
- 16 **Town of Canmore, Canmore, Alberta.**  
Discussed a community service learning project for an undergraduate class.
- 16-on **Department of Music, University of Alberta, Edmonton, Alberta.**  
Developing and applying Deep Learning to ethomusical data to identify ethnic and cultural attributes of music recordings.
- 15-16 **Carnegie Mellon University, Silicon Valley Campus, Moffett Field, California.**  
Worked on non-negative matrix factorization for played modeling in training systems.
- 15-16 **University of California Santa Cruz, Santa Cruz, California.**  
Worked on AI/ML for player modeling and scenario management in training systems.
- 14-16 **Royal Alexandra Hospital, Faculty of Medicine and Dentistry, UofA, Edmonton, Alberta.**  
Worked on AI/ML for player modeling and scenario management in training systems.
- 13-15 **Department of English and Film Studies, University of Alberta, Edmonton, Alberta.**  
Developed AI for player modeling and experience management. Directed development of *iGiselle*.
- 09-13 **University of British Columbia Okanagan, Kelowna, British Columbia.**  
Developed real-time heuristic search algorithms.

- 07-10 **Reykjavik University, Reykjavik, Iceland.**  
Developed real-time heuristic search algorithms.
- 07 **USC Institute for Creative Technologies (ICT), Marina del Rey, California.**  
Developed and intergrated computational models for culturally and emotionally affected behavior.
- 06-on **Department of Psychology, University of Alberta, Edmonton, Alberta.**  
Developed computational models for cognitive behavior in humans and other animals.
- 06-15 **BioWare Corp., Edmonton, Alberta.**  
Discussed AI algorithms.
- 05-08 **Jožef Stefan Institute, Ljubljana, Slovenia.**  
Developed real-time heuristic search algorithms.
- 05 **Institut d'Investigació en Intel.ligència Artificial, Bellaterra, Spain.**  
Developed real-time heuristic search algorithms.
- 05 **University of Southern California, Los Angeles, California.**  
Developed real-time heuristic search algorithms.
- 04-06 **Syncrude Research, Ltd., Edmonton, Alberta.**  
Worked on AI/ML models.
- 03 **Cross Cancer Institute, Edmonton, Alberta.**  
Worked on AI/ML models for brain tumor growth/recognition.
- 02 **Canadian Forestry Service, Pacific Forestry Centre, Victoria, British Columbia.**  
Developed AI/ML algorithm for tree identificiation in aerial photographs.
- 01 **Alberta Research Council, Vegreville, Alberta.**  
Developed AI/ML algorithm for tree identificiation in aerial photographs.

## Service

### International

- 18 **Local chair, AIIDE conference.**
- 18 **Conference co-chair, SoCS symposium.**
- 15 **Tenure case reviewer, a US university.**
- 11 **Conference chair, AIIDE conference.**
- 10 **Panelist, Symposium on Narrative Intelligence, University of California Santa-Cruz.**
- 10-on **Member, Steering Committee, AIIDE conference.**
- 10 **Program chair, AIIDE conference.**
- 10 **Member, Organizing Committee, AAAI workshop on AI and fun.**
- 10 **Member, Advisory Board, AAMAS workshop.**
- 09-12 **Member, Steering Committee, SARA symposium.**
- 09 **Member, Organizing Committee, AIIDE conference.**
- 09 **Co-chair, SARA symposium.**
- 06 **Member, Organizing Committee, ECAI workshop.**
- 06 **Workshop and Tutorial Chair, ICML.**
- 05 **Co-chair, IJCAI workshop.**

### National

- 16 **Accreditation Committee Member, BC Ministry of Advanced Education, Vancouver, British Columbia.**

### Local

- 18-on **Director, Science Internship Program, University of Alberta.**
- 17-on **Member, Graduate Admission Committee, University of Alberta.**
- 17 **Event Host, Leonardo Art, Science, Evening Rendezvous (LASER) Talk, Edmonton, Alberta.**
- 17 **Member, EVE2050 Project at the University of Alberta, Edmonton, Alberta.**

- 17 **Committee Member**, *Leonardo Art, Science, Evening Rendezvous (LASER) at the University of Alberta*, Edmonton, Alberta.
- 17 **Panelist**, *Intersections of Gaming and Gambling*, Edmonton, Alberta.
- 17 **Panelist**, *CIPS panel on Ethics and AI*, Edmonton, Alberta.
- 16-17 **Member**, *Industry Liason Committee*, University of Alberta.
- 15 **Panelist**, *Game Discovery Exhibition (GDX)*, Edmonton, Alberta.
- 15 **Panel commentator**, *MLCS Graduate Student Conference*, University of Alberta.
- 14-15 **Director**, *CS Internship Program*, University of Alberta.
- 13-14 **Member**, *Faculty of Education Council*, University of Alberta.
- 11-12 **Coordinator**, *Distinguished Lecture Series*, University of Alberta.
- 10-15,17-18 **Producer, MC**, *CMPUT 250 Annual Game Award Ceremony*, Edmonton, Alberta.
- 10 **Member**, *Queen Elizabeth II Scholarship Selection Committee*, University of Alberta.
- 09-15 **Member**, *Faculty of Extension Council*, University of Alberta.
- 09-11, 18-on **Member**, *Graduate Program Committee*, University of Alberta.
- 08-09, 12-14 **Member**, *Undergraduate Curriculum Committee*, University of Alberta.
- 02 **Chair**, *Quantum Computing Summer School*, University of Alberta.

## Reviewing

- 16 **Reviewer**, *Mathematical Problems in Engineering Journal*.
- 16 **Reviewer**, *Journal of Entertainment Computing*.
- 14 **Reviewer**, *Game AI Pro 2 book*.
- 14-15 **PC member**, *INT workshop*.
- 14 **Senior PC member**, *FDG conference*.
- 13 **Reviewer**, *Advances in Artificial Intelligence journal*.
- 13 **PC member**, *IEEE Computational Intelligence for Human-like Intelligence symposium*.
- 12 **Award committee member**, *AIIDE conference*.
- 11-13 **PC member**, *FDG conference*.
- 11 **Senior PC member**, *IJCAI conference*.
- 10-11 **PC member**, *SoCS symposium*.
- 10-11 **PC member**, *ICAPS workshop*.
- 09, 12, 14-15, 17 **Reviewer**, *IEEE transactions on computational intelligence and AI in games*.
- 08, 12, 14-17 **PC member**, *AIIDE conference*.
- 08, 11-12, 14-15 **PC member**, *FLAIRS conference*.
- 07 **PC member**, *ICRA conference*.
- 07-08, 11, 13, 15-16 **Reviewer**, *JAIR*.
- 06 **Reviewer**, *Morgan Kaufmann publishers, Elsevier*.
- 06-08, 12, 16-17, 19 **PC member**, *AAAI conference*.
- 05, 06, 09-10, 14 **Reviewer**, *AI journal*.
- 05, 07, 09 **PC member**, *IJCAI conference*.
- 05 **PC member**, *IVCNZ conference*.
- 04, 08 **PC member**, *ICML conference*.
- 04 **Guest editor**, *Computational Intelligence journal*.
- 04 **Reviewer**, *Springer-Verlag*.
- 04, 06, 10, 14 **Reviewer**, *NSERC*.
- 17 **Reviewer**, *An overseas funding foundation*.

- 17 **Reviewer**, *MITACS*.
- 04 **Reviewer**, *IEEE transactions on systems, man, and cybernetics, Part A*.
- 04 **Reviewer**, *IEEE transactions on systems, man, and cybernetics, Part B*.
- 03 **PC member**, *CIRA symposium*.
- 02 **PC member**, *CG conference*.
- 01 **PC member**, *Australian AI conference*.
- 01, 11 **Reviewer**, *ML journal*.
- 01 **Reviewer**, *Computational Intelligence journal*.
- 01 **Reviewer**, *Wiley*.

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## Membership

- 18-on **Member**, *Institute of Electrical and Electronics Engineers (IEEE)*, Piscataway, New Jersey.
- 02-on **Associate Member**, *Alberta Machine Intelligence Institute (AMII) / Alberta Innovates Center for Machine Learning (AICML)*, Edmonton, Alberta.
- 96-on **Member**, *Association for the Advancement of Artificial Intelligence (AAAI)*, Palo Alto, California.

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## Hobbies (<http://bulitko.net>)

### Interests

- 81-on Ray tracing, drawing and painting: <https://www.instagram.com/vadim.bulitko>
- 84-on Photography <https://www.instagram.com/v.bulitko>
- 94-on Film making:
  - <https://www.youtube.com/user/VadimBulitko/videos>
  - <http://www.imdb.com/name/nm7926176>
- 82-on Fiction and poetry writing
- 81-on Weight lifting, cycling, jogging, hiking, travel and snorkeling
- 91-18 Martial arts
- 09-17 R/C flying
- 00-16 Music composition and remixing: <https://soundcloud.com/vadim-bulitko>

### Membership

- 16-17 **Member**, *Latitude 53*, Edmonton, Alberta.
- 15-16 **Associate Member**, *Film And Video Arts society (FAVA)*, Edmonton, Alberta.
- 15-16 **Member**, *Writers' Guild of Alberta*, Edmonton, Alberta.

### Festival Selections, Public Screenings and Awards

- 18 **Gotta-Minute Film Festival**, *Hawaii Moments*, Edmonton, Alberta.
- 18 **Gotta-Minute Film Festival**, *Into the Night*, Edmonton, Alberta.
- 17 **Edmonton Expo**, *The Dream Keeper*, Edmonton, Alberta.
- 17 **Gotta-Minute Film Festival**, *The Easter Snow*, Edmonton, Alberta.
- 17 **The EFMG Frigid Film Festival**, *The Dream Keeper*, Edmonton, Alberta.
- 17 **UK Screen One International Film Festival**, *Tibi Fide*, Leicester, UK.
- 17 **UK Screen One International Film Festival**, *The Autumn Station*, Leicester, UK.
- 17 **Toronto Short Film Festival**, *The Autumn Station*, Toronto, Ontario.
- 16 **Hollywood Screenings Film Festival**, *Tibi Fide: Semi-finalist*, Santa Monica, California.
- 16 **Canada Shorts Film Festival**, *Charge!: Award of Merit*, Saint John, New Brunswick.
- 16 **Canada Shorts Film Festival**, *Summer Time: Award of Merit*, Saint John, New Brunswick.
- 16 **Canada Shorts Film Festival**, *The Autumn Station: Honorable Mention*, Saint John, New Brunswick.
- 16 **Edmonton Short Film Festival**, *The Timelapse Etudes*, Edmonton, Alberta.
- 16 **Edmonton Short Film Festival**, *Charge!*, Edmonton, Alberta.
- 16 **Edmonton Expo**, *Script Dreams*, Edmonton, Alberta.
- 16 **Edmonton Expo**, *Tibi Fide*, Edmonton, Alberta.
- 16 **Edmonton Expo**, *Charge!*, Edmonton, Alberta.
- 16 **The Muskoka Independent Film Festival**, *Charge!*, Gravehurst, Ontario.
- 16 **Diamond in the Rough Film Festival**, *Charge!*, Cupertino, California.
- 16 **The World's Independent Film Festival**, *The Autumn Station*, San Francisco, California.
- 16 **60 Seconds or Less Video Festival**, *Spring in California*, Chestertown, Maryland.
- 16 **FAVA Northwest Film Challenge**, *Charge!*, Edmonton, Alberta.
- 16 **Metro Shorts**, *The Autumn Station*, Edmonton, Alberta.
- 16 **Barcelona Planet Film Festival**, *Tibi Fide*, <http://barcelonaplanetfilmfestival.weebly.com/>.
- 16 **Best Shorts Competition**, *Spring in California*, La Jolla, California.
- 16 **Best Shorts Competition**, *The Autumn Station*, La Jolla, California.
- 16 **Best Shorts Competition**, *Tibi Fide*, La Jolla, California.
- 16 **Miniature Film Festival**, *The Autumn Station*, Vancouver, British Columbia.
- 16 **Metro Shorts**, *Spring in California*, Edmonton, Alberta.

- 15 **Shaw TV**, *Summer Time*, Edmonton, Alberta.
- 15 **FAVA Videokitchen**, *Summer Time*, Edmonton, Alberta.
- 15 **Metro Shorts**, *Summer Time*, Edmonton, Alberta.
- 15 **Edmonton Short Film Festival**, *Summer in Alberta*, Edmonton, Alberta.
- 15 **Gotta-Minute Film Festival**, *Particle Drift*, Edmonton, Alberta.
- 15 **Gotta-Minute Film Festival**, *Summer in Alberta*, Edmonton, Alberta.
- 15 **Gotta-Minute Film Festival, Kids Program**, *Summer in Alberta*, Edmonton, AB.
- Film-making Experience**
- 18 **DP, Editor**, *A Winter Evening*, Edmonton, Alberta.
- 18 **DP, Editor**, *Helios*, Edmonton, Alberta.
- 18 **DP, Editor**, *135 Rain*, Edmonton, Alberta.
- 18 **DP, Editor**, *Victoria*, Victoria, British Columbia.
- 18 **DP, Editor**, *River Walk*, Edmonton, Alberta.
- 18 **DP, Editor**, *Into the Night*, Edmonton, Alberta.
- 18 **DP, Editor**, *Hawaii Moments 2017*, Big Island, Hawaii.
- 18 **DP, Editor**, *A Stormy Saturday*, Edmonton, Alberta.
- 18 **DP, Editor**, *The Lapse*, Edmonton, Alberta.
- 18 **DP, Editor**, *Aurora Borealis*, Edmonton, Alberta.
- 18 **DP, Editor**, *Regina*, Regina, Saskatchewan.
- 18 **DP, Editor**, *A Summer Day*, Edmonton, Alberta.
- 17-on **DP, Editor, Assistant Producer**, *The Discount Factor*, Edmonton, Alberta.
- 17 **DP, Editor**, *Vignettes of Kita No Taiko @ Beats!*, Edmonton, Alberta.
- 17 **DP, Editor, Producer**, *The Escape*, San Francisco, California.
- 17 **DP, Editor**, *The Easter Snow*, Edmonton, Alberta.
- 17 **DP, Editor**, *Art Birthday @ BEAMS*, Edmonton, Alberta.
- 16 **DP, Editor**, *PAN Project Vignettes*, Edmonton, Alberta.
- 16 **Director, DP, Writer, Editor, Producer, Executive Producer**, *Script Dreams*, Edmonton, Alberta.
- 16 **Director, DP, Actor**, *UpStart*, Edmonton, Alberta.
- 16 **DP, Editor, Producer**, *The Timelapse Etudes*, Edmonton, Alberta.
- 16 **DP, Editor, Executive Producer**, *Charge!*, Edmonton, Alberta.
- 16 **DP, Editor, Executive Producer**, *The Dream Keeper*, Edmonton, Alberta.
- 16 **Actor, DP, Co-Producer**, *Mirroring*, Edmonton, Alberta.
- 15-16 **Writer, Director, DP, Editor, Producer**, *Tibi Fide*, Santa Cruz, California.
- 15-16 **Director, DP, Editor, Producer**, *The Autumn Station*, Edmonton, Alberta.
- 15-16 **DP, Editor, Producer**, *Spring in California*, California.
- 15 **DP, Editor, Producer**, *Luna*, Edmonton, Alberta.
- 15 **Director, DP, Editor, Producer**, *Summer Time*, Alberta.
- 15 **DP**, *My Love*, Edmonton, Alberta.
- 15 **Photographer, DP, Editor**, *Who Am I? The Unauthorized Stories from the Varscona Parkade*, Toy Guns Dance Theatre, Edmonton, Alberta.
- 15 **DP**, *Modelling Wildfires*, Edmonton, Alberta.
- 15 **DP**, *Three Guys Walk Into a Bar*, Edmonton, Alberta.
- 15 **Director, DP, Editor**, *MusiCycle*, Edmonton, Alberta.
- 15 **Programmer, Editor, Producer**, *Particle Drift*, Edmonton, Alberta.
- 15 **DP, Editor, Producer**, *California in Slow Motion*, California.
- 15 **DP, Editor, Producer**, *Spring Comes to Alberta*, Edmonton, Alberta.
- 14 **Photographer, DP, Editor**, *Bright Lights, Cold Water*, Toy Guns Dance Theatre, Edmonton, Alberta.



- 11 **Photographer, DP, Editor**, *Madame Butterfly*, Mercury Opera, Edmonton, Alberta.
- 06 **Actor and DP**, *various productions*, Monday Night Club, FAVA, Edmonton, Alberta.
- 02 **Actor, DP, Editor, Co-director**, *Tao of Non-Action*, Edmonton, Alberta.