

Bence Cserna

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RESEARCH INTERESTS

Artificial intelligence, heuristic search, real-time planning, reinforcement learning, robotics

EDUCATION

Ph.D. in Computer Science August 2013 – 2019 (Expected)
University of New Hampshire (UNH), U.S.A.
All but dissertation, GPA: 4.0
Dissertation title: Real-time Planning for Robots, Advisor: Wheeler Ruml

M.S. in Computer Science August 2011 – June 2013
Budapest University of Technology and Economics, Hungary
Highest Honors (top 1%)

Exchange Student (Computer Science) Fall 2012
University of New Hampshire, U.S.A.

Special Student (Computer Science) Fall 2011 – Spring 2012
Aquincum Institute of Technology, Hungary

B.S. in Computer Science September 2007 – December 2011
Budapest University of Technology and Economics, Hungary

PROFESSIONAL EXPERIENCE

AI Research Scientist Intern, Lyft Level 5, Palo Alto, CA Summer 2018

- Designed and developed a real-time spatio-temporal planner for the Lyft Level 5 AV that was successfully deployed on a physical system and completed road tests.
- Submitted 6 internal AV related patent proposals.

Autonomous Vehicle Research Intern, nuTonomy, Boston, MA Summer 2017

- Improved the core planner of the nuTonomy autonomous vehicle using C++ and Python.
- Introduced real-time heuristic search to reduce latency and to improve consistency.
- Sped up several components of the planner by 10 – 400%.

Research Assistant, UNH, Durham, NH Summer 2015 – Spring 2019

- Developed two open source, low-latency planning frameworks for real-time heuristic search.
- Created an evaluation suite for online multi-armed bandit algorithms.
- Implemented simple object detection for ROS using a Kinect sensor.

Research Assistant, Lamprey Networks, Durham, NH Summer 2014 – Spring 2015

- Implemented a connected health care hub on Android.
- Developed multiple REST back-end services using Spring, MongoDB, and Protocol Buffers.

Software Engineer/Team Leader Fall 2010 – Summer 2013
Ericsson Research and Development Center (ETH), Budapest, Hungary

- Promoted to team leader of a high priority innovation project; supervised 6 people.
- Promoted to technical leader of an international cellular network caching research.

REFEREED CONFERENCE PUBLICATIONS Shahaf S. Shperberg, Solomon Eyal Shimony, Andrew Coles, Bence Cserna, Erez Karpas, Wheeler Ruml, “Allocating Planning Effort when Actions Expire,” *Proceedings of the Twenty-Third AAAI Conference on Artificial Intelligence(AAAI-19)*, 2019. (Acceptance rate: 16%)

Michael Cashmore, Andrew Coles, Bence Cserna, Erez Karpas, Daniele Magazzeni, Wheeler Ruml, “Temporal Planning While the Clock Ticks,” *Proceedings of the International Conference on Automated Planning and Scheduling (ICAPS-18)*, 2018.

Bence Cserna, William Doyle, Jordan Ramsdell, and Wheeler Ruml, “Avoiding Dead Ends in Real-time Heuristic Search,” *Proceedings of the Twenty-Second AAAI Conference on Artificial Intelligence (AAAI-18)*, 2018. (Acceptance rate: 25%, Selected for oral presentation: top 11%)

Bence Cserna, Marek Petrik, Reazul Hasan Russel, Wheeler Ruml, “Value Directed Exploration in Multi-Armed Bandits with Structured Priors,” *Proceedings of the Thirty-third Conference on Uncertainty in Artificial Intelligence (UAI-17)*, 2017. (Acceptance rate: 31%)

Bence Cserna, Wheeler Ruml, Jeremy Frank, “Metareasoning for On-line Planning with Dura-tive Actions,” *Proceedings of the International Conference on Automated Planning and Scheduling (ICAPS-17)* pp. 56-60, 2017.

REFEREED SYMPOSIUM PUBLICATIONS Bence Cserna, William J. Doyle, Tianyi Gu, Wheeler Ruml, “Safe Temporal Planning for Urban Driving,” *Proceedings of the AAAI Workshop on Artificial Intelligence Safety (SafeAI-19)*, 2019.

Michael Cashmore, Andrew Coles, Bence Cserna, Erez Karpas, Daniele Magazzeni, Wheeler Ruml, “Situating Planning for Execution Under Temporal Constraints,” *AAAI Spring Symposium on Integrating Representation, Reasoning, Learning, and Execution for Goal Directed Autonomy (SIRLE-18)*, 2018.

Bence Cserna, Mike Bogochow, Stephen Chambers, Michaela Tremblay, Sammie Katt, Wheeler Ruml, “Anytime versus Real-Time Heuristic Search for On-Line Planning,” *Proceedings of the International Symposium on Combinatorial Search (SoCS-16)*, pp. 131-132, 2016.

Bence Cserna, “Planning with Concurrent Execution,” *International Conference on Automated Planning and Scheduling*, Proceedings of the Doctoral Consortium, pp. 44-46, 2016.

PATENTS Bence Cserna, Attila Mihaly, Gabor Paller, “Internet protocol video telephony with carrier grade voice,” US20150189229A1, US9204092B2 (Filed: 2013 Granted: 2015).

Bence Cserna Attila Mihaly, “Method for transferring a communication session between de-vices,” US20150245398A1, US9351328B2 (Filed: 2012 Granted: 2016).

HONORS Inventor Award, Ericsson Research and Development '12, '13, '16, '16
3rd place out of 100 teams \$2,500, Holloway Prize Championship, UNH 2014
Best Thesis Award Nomination, Budapest Institute of Technology 2013
3rd place out of 50+ teams, Bee Smarter 24 Hour Programming Challenge 2013
Top 15 finalist out of 1000+ teams, CTF Competition, CSAW, NYC Poly 2012

FELLOWSHIPS Dissertation Year Fellowship \$24,300, Graduate School, UNH 2018 – 2019
Educational Scholarships \$20,000, Hungarian Initiatives Foundation 2015 – 2016
Full Tuition Fellowship \$29,410, Department of Computer Science, UNH 2014 – 2015
Full Tuition Scholarship \$26,000, Acquincum Institute of Technology 2012, 2013
UNH Exchange Program Award \$17,700, Budapest University of Technology 2012

INVITED TALKS	Real-time Planning for Autonomous Agents, UNH, Robotics seminar	2017
	Real-time Planning Research and Implementation, UNH, CS900 Graduate seminar	2016
TEACHING EXPERIENCE	<i>Teaching Assistant, Artificial Intelligence, Machine Learning</i>	Spring 2018
	<i>Algorithms, Databases</i>	Spring 2017
	<i>Artificial Intelligence</i>	Fall 2015, Fall 2016
	<i>Algorithms</i>	Spring 2016
	<i>Databases, Computer Networks</i>	Spring 2014
	<i>Object-Oriented Design and Development</i>	Fall 2013
PROG. LANGUAGES	C++, Kotlin, Java, Python	