Thanard Kurutach

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Research Interests

I am interested in using artificial intelligence to better human lives, and make better decisions. My current research goal is to develop algorithms that enable agents to efficiently solve complex decision-making problems using learning and planning.

Education

University of California, Berkeley, Berkeley, CA — 2016 – present
Candidate for Ph.D. in Computer Science — 4.0/4.0
Research Adivsors: Pieter Abbeel, Stuart Russell

Massachusetts Institute of Technology, Cambridge, MA — 2012 – 2016
Candidate for B.S. in Electrical Engineering and Computer Science — 4.9/5.0
Candidate for B.S. in Mathematics — 5.0/5.0

Awards and Honours

UC Berkeley EECS Department Fellowship — 2016

Provost's Graduate Excellence Fellowship *(decline)* — 2016 – 2020

Lincoln Laboratory Undergraduate Research and Innovation Scholar — 2015

Royal Thai Scholar — 2011 – 2016

Round 2 Qualifier, Google Code Jam — 2013

Gold Medal, 52nd International Mathematical Olympiad (IMO) — 2011

Gold Medal, Asian Pacific Mathematics Olympiad (APMO) — 2011

Silver Medal, 51st International Mathematical Olympiad (IMO) — 2010

Silver Medal, 50th International Mathematical Olympiad (IMO) — 2009

Publications

Michael Laskin*, Scott Emmons*, Ajay Jain*, **Thanard Kurutach**, Pieter Abbeel, Deepak Pathak. "Sparse Graphical Memory for Robust Planning" *Proceedings of Neural Information Processing Systems (NeurIPS), 2020.*

Younggyo Seo*, Kimin Lee*, Ignasi Clavera, **Thanard Kurutach**, Jinwoo Shin, Pieter Abbeel. "Trajectory-wise Multiple Choice Learning for Dynamics Generalization in Reinforcement Learning." *Proceedings of Neural Information Processing Systems (NeurIPS), 2020.*

Thanard Kurutach*, Kara Liu*, Pieter Abbeel, Aviv Tamar. "Hallucinative Topological Memory for Zero-Shot Visual Planning." *Proceedings of the International Conference on Machine Learning (ICML), 2020.*

Yilin Wu*, Wilson Yan*, **Thanard Kurutach**, Lerrel Pinto, Pieter Abbeel. "Learning to Manipulate Deformable Objects without Demonstrations." *Proceedings of the Robotics: Science and Systems (RSS), 2020.*

Angelina Wang, **Thanard Kurutach**, Kara Liu, Pieter Abbeel, Aviv Tamar. "Learning Robotic Manipulation through Visual Planning and Acting." *Proceedings of the Robotics: Science and Systems (RSS), 2019.*

Thanard Kurutach*, Aviv Tamar*, Ge Yang, Stuart Russell, Pieter Abbeel. "Learning Plannable Representation with Causal InfoGAN." *Proceedings of Neural Information Processing Systems (NeurIPS), 2018.*

Thanard Kurutach, Ignasi Clavera, Yan Duan, Aviv Tamar, Pieter Abbeel. "Model Ensemble Trust Region Policy Optimization." *Proceedings of the International Conference on Learning Representations (ICLR), 2018.*

Lawson Wong, **Thanard Kurutach**, Leslie Kaelbling, Tomás Lozano-Peréz. "Object-based World Modeling in Semi-Static Environments with Dependent Dirichlet-Process Mixtures." *Proceedings of the International Joint Conference on Artificial Intelligence (IJCAI), 2016.*

Preprints

Michael Laskin, **Thanard Kurutach**, Pieter Abbeel. "Discrete Representation Learning for Goal-Conditioned Visual Reinforcement Learning" *NeurIPS Workshop on Deep Reinforcement Learning, 2019.*

Thanard Kurutach, Mohammad Babaeizadeh, Dumitru Erhan, Sergey Levine, Chelsea Finn. "Hierarchical Visual Model-based Reinforcement Learning" *ICLR Workshop on Beyond Tabula Rasa in Reinforcement Learning, 2020.*

Thanard Kurutach*, Julia Peng*, Yang Gao, Stuart Russell, Pieter Abbeel. "Discrete Predictive Representation for Long-horizon Planning" *NeurIPS Workshop on Object Representations for Learning and Reasoning, 2020.*

Tal Daniel, **Thanard Kurutach**, Aviv Tamar. "Deep Variational Semi-Siupervised Novelty Detection." *In submission to AISTATS, 2021.*

Oral Presentations

Learning Representation for Planning and Acting. *BayLearn, Facebook.* October 2018.

Learning Plannable Representation with Causal InfoGAN. *ICML/IJCAI/AAMAS Workshop on Planning and Learning.* July 2018.

Research and Industry Experience

Berkeley Artificial Intelligence Research (BAIR), Research Assistant — 2016 – present

Google, Inc., Brain Team, Student Researcher — 2019 - 2020

Google, Inc., Speech Team, Research Intern — 2016

EnergySage, Inc., Data Scientist Intern — 2016

Learning and Intelligent Systems Group, with Kaelbling, Lozano-Peréz — 2014 – 2016

MIT CSAIL Machine Learning Group, with Stefanie Jegelka — 2015 – 2015

National ICT Australia, Research Intern — 2014

Harvard Microrobotics Laboratory, with Robert J. Wood — 2013

Nanostructures and Computation Group, with Steven G. Johnson — 2012 – 2013

Teaching Experience

Invited Lectures

Lecture AI and Neural Network Design — Spring 2019
in Leading Trends in Humanities, the Sciences and Technology program, UC Berkeley Extension.

Teaching Assistant

Berkeley CS188: Introduction to Artificial Intelligence	Fall 2018
MIT 6.036: Introduction to Machine Learning	Spring 2016
MIT 6.008: Introduction to Inference	Fall 2015
MIT 18.310: Principles of Applied Mathematics	Fall 2014
MIT 6.001: Introduction to EECS	Spring 2013

Mentoring and Advising

Undergraduate students:

Julia Peng, UC Berkeley	Now at Facebook
Fenglu Hong, UC Berkeley	Now MS student at Stanford
Yilin Wu, Shanghai Jiao Tong University	Becoming MS student at Stanford
Wilson Yan, UC Berkeley	Now PhD student at UC Berkeley
Angelina Wang, UC Berkeley	Now PhD student at Princeton
Kara Liu, UC Berkeley	Becoming PhD student at Stanford
Christine Tung, UC Berkeley	Now at Google

Visiting Scholars:

Ge Yang, PhD student, University of Chicago
Misha Laskin, PhD graduate, University of Chicago
Yuto Fujii, Engineer, Komatsu Ltd

Professional Services

Paper Reviewing:

Neural Information Processing Systems (NeurIPS) 2019, 2020
International Conference on Learning Representations (ICLR) 2021
International Conference on Machine Learning (ICML) 2019, 2021
American Association for Artificial Intelligence (AAAI) 2020
IEEE International Conference on Robotics and Automation (ICRA) 2019, 2020

Volunteering Experience

Youth Leader 2018 – present

Soka Gakkai International

I foster youth in my local community to engage in peace activities that focus on one-on-one encouragements and dialogue as a lasting foundation for creating a culture of peace.