

Tuyen P. Le | Resume

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*"Humans should be worried about the threat posed by
artificial intelligence." **Bill Gates***

Education

Kyung Hee University <i>Master and Ph.D., 4.14/4.3</i> Research Topics: Deep Reinforcement Learning, Machine Learning, Big Data, Robotics	South Korea 2014/03–2019/02
Bach Khoa University <i>Bachelor, 8.46/10.0</i> Honor program	Ho Chi Minh City 2008–2013
Luong Van Chanh Gifted High School <i>Diploma, 9+/10</i> Subjects taken: Mathematics, Physics, Chemistry, English ...	Phu Yen province 2005–2008

Ph.D. Dissertation

Title: *Deep Hierarchical Reinforcement Learning Algorithms in Partially Observable Markov Decision Processes*

Supervisors: TaeChoong Chung

Abstract: In recent years, reinforcement learning has achieved many remarkable successes due to the growing adoption of deep learning techniques and the rapid growth in computing power. Nevertheless, it is well-known that flat reinforcement learning algorithms are often not able to learn well and data-efficient in tasks having hierarchical structures, e.g. consisting of multiple subtasks. Hierarchical reinforcement learning is a principled approach that is able to tackle these challenging tasks. On the other hand, many real-world tasks usually have only partial observability in which state measurements are often imperfect and partially observable. The problems of RL in such settings can be formulated as a partially observable Markov decision process (POMDP). In this paper, we study hierarchical RL in POMDP in which the tasks have only partial observability and possess hierarchical properties. We propose a hierarchical deep reinforcement learning approach for learning in hierarchical POMDP. The deep hierarchical RL algorithm is proposed to apply to both MDP and POMDP learning. We evaluate the proposed algorithm on various challenging hierarchical POMDP.

Key words: Hierarchical Deep Reinforcement Learning, Partially Observable MDP (POMDP), Semi-MDP, Partially Observable Semi-MDP (POSMDP)

Experience

Professional.....

Software Engineer at KMS Technology Vietnam

Ho Chi Minh City

2013–2014

Ranked: Top 26 best workplaces in Vietnam

Website: <https://www.kms-technology.com/>

Description: Develop some mobile applications (iOS and Android): Football statware, Basketball Statware, pixNotes (a tool for internal use).

Miscellaneous.....

Internship at Recobell (Yello Mobile)

Seoul City

2015–2016

Website: <http://www.recobell.com>

Description: Develop mobile applications (iOS and Android). Sometimes, I did the jobs related to web applications on AWS

Internship at Polliwog Corp.

Seongnam City

2014–2015

Website: <http://www.polliwogeda.com/xenew/>

Description: Develop algorithm (C++) to find a shortest path in a Printed Circuit Board (PCB).

Internship at VNG Corp.

Ho Chi Minh City

2012–2013

Website: <https://vng.com.vn/>

Description: Work in a group to develop a website using state-of-the-art technologies.

Languages

Korean: Intermediate level (TOPIK I level 2)

Read, Write, Speak (simple form)

English: Influence

Second language

Vietnamese: Influence

Mother language

Computer skills

Programming Languages: Python, Java, C++, Objective-C, Swift, Matlab, RDF, HTML, XML, CSS, Javascript.

Tools: Pycharm, Visual Studio, Matlab, Eclipse, XCode, Inkscape, Photoshop, Lightroom, Premiere, Draw.io.

Libraries: Cocoa, OpenCV, Tensorflow, Matplotlib, ROS, Gym AI, Hadoop, Spark

Platforms: Window, Mac, Ubuntu, AWS, iOS, Android

Courses I did

Machine Learning and Robotics: Big Data Analysis, Mobile Robotics, Data Mining, Semantic Web, Machine Learning, Artificial Intelligence

Mathematics: Graph Theory, Queuing Theory, Advanced Probability and Statistics, Engineering Optimization, Discrete Mathematics

Related CS: Query Processing, Information Visualization, Advanced Computer Graphics, Future Internet, Computer Vision, Real-time Systems, Advanced Topic in Information Security, Technical Writing

Undergraduate: Computer Architecture, OOP, Data Structure and Algorithms, Database Systems, Operating Systems, Computer Networks, Computer Graphics, Algorithmic Analysis, Distributed Systems, Cryptography

References

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Publications

Journals

- [1]T. P. Le, N. A. Vien, and T. Chung. A deep hierarchical reinforcement learning algorithm in partially observable markov decision processes. *IEEE Access*, 6:49089–49102, 7 2018.
- [2]Tuyen P. Le, Hoang Huu Viet, Sang Hyeok An, Seung Gwan Lee, Dong-Han Kim, and Tae Choong Chung. Univector field method-based multi-agent navigation for pursuit problem in obstacle environments. *Journal of Central South University*, 24(4):1002–1012, Apr 2017.
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- [4]Hoang Huu Viet, Le Hong Trang, SeungGwan Lee, Le Pham Tuyen, and TaeChoong Chung. A shortlist-based bidirectional local search for the stable marriage problem. *Applied Intelligence*, 2018 (Major Revision).

International Conferences

- [5]Viet-Hung Dang, Ngo Anh Vien, Tuyen P. Le, and Taechoong Chung. A functional optimization method for continuous domains. In Yuanfang Chen and Trung Q. Duong, editors, *Industrial Networks and Intelligent Systems*, pages 254–265, Cham, 2018. Springer International Publishing.
- [6]M. A. Layek, N. Q. Thai, M. A. Hossain, N. T. Thu, Tuyen P. Le, A. Talukder, T. Chung, and E. N. Huh. Performance analysis of h.264, h.265, vp9 and av1 video encoders. In *2017 19th Asia-Pacific Network Operations and Management Symposium (APNOMS)*, pages 322–325, Sept 2017.

[7]Tuyen P. Le and T. Chung. Controlling bicycle using deep deterministic policy gradient algorithm. In *2017 14th International Conference on Ubiquitous Robots and Ambient Intelligence (URAI)*, pages 413–417, June 2017.

[8]Tuyen P. Le, A. Layek, N. A. Vien, and T. Chung. Deep reinforcement learning algorithms for steering an underactuated ship. In *2017 IEEE International Conference on Multisensor Fusion and Integration for Intelligent Systems (MFI)*, pages 602–607, Nov 2017.

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Domestic Conferences.....

[10]Tae Choong Chung and Le Pham Tuyen. Pleasure of Learning. *ICCC International Digital Design Invitation Exhibition*, :131–131, 2017.

[11]TaeChoong Chung and Le Pham Tuyen. RLVisualizer: An application for Visualizing Trajectories of Reinforcement Learning Problem. volume , pages 13–14. The Korea Contents Society, 2017.

[12]CholJin Jong, Seung yoon Choi, JinSeok Kim, Md. Abu Layek, Tuyen P. Le, Marlith Jaramillo, and TaeChoong Chung. Study of Sound Location Tracking Mobile Robot Using Lego Mindstorms. volume , pages 1028–1029. KOREA INFORMATION SCIENCE SOCIETY, 2016.

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[14]Md Abu Layek, Ngo Quang Thai, Md Alamgir Hossain, Ngo Thien Thu, Tuyen P. Le, Ashis Talukder, TaeChoong Chung, and Eui-Nam Huh. Analysis of the Effects of Timing Presets on the Performance of H.264/AVC and H.265/HEVC Video Encoders. volume , pages 442–443. Korea Institute Of Communication Sciences, 2017.

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[16]Md. Abu Layek, Seung yoon Choi, Tuyen P. Le, Marlith Jaramillo, JinSeok Kim, Jeong cheol jin, Eui-Nam Huh, and TaeChoong Chung. Compression Efficiency Of Text Images In Hangul And Other Languages. volume , pages 777–779. KOREA INFORMATION SCIENCE SOCIETY, 2016.

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