




# Yaqian ZHANG

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EDUCATION	<b>Nanyang Technological University (NTU)</b> , Singapore Aug 2015 – Feb 2020 Ph.D. in Computer Science (GPA: 4.83/5) (Expected) Thesis: <i>Understanding and improving interactive systems design with machine learning</i>  <b>Shanghai Jiao Tong University (SJTU)</b> , Shanghai, China Sep 2011 – Jun 2015 B.Eng. in Information Engineering (GPA: 4.53/5) Thesis: <i>SSIM-inspired rain removal with quaternion sparse representation</i>
RESEARCH TOPICS	<b>Reinforcement Learning:</b> Developing efficient algorithms for decision-making in practical problems <b>Human Computer Interaction:</b> Personalizing interactive experience in dynamic systems
SELECTED PUBLICATIONS	<b>Yaqian Zhang</b> , Wooi-Boon Goh, Bootstrapped policy gradient for difficulty adaptation in intelligent tutoring systems. <i>In Proc. of the 18th International Conference on Autonomous Agents and Multiagent Systems (AAMAS 2019 oral)</i> , Montreal, Canada, May 1317, 2019. (Acceptance rate = 24.2%) <b>Yaqian Zhang</b> , Wooi-Boon Goh, The influence of peer accountability on attention during gameplay. <i>Computers in Human Behavior</i> , 84 (2018): 18-28. (Impact factor = 4.3) <b>Yaqian Zhang</b> , Jacek Mańdziuk, Chai Hiok Quek, Wooi-Boon Goh, Curvature-based method for determining the number of clusters. <i>Information Sciences</i> , 415 (2017): 414-428. (Impact factor = 5.5) <b>Yaqian Zhang</b> , Wooi-Boon Goh, Reinforcement learning-based adaptive task difficulty personalization. <i>User Modeling and User-Adapted Interaction</i> . (Impact factor = 3.4) ( <i>To be submitted.</i> )
RESEARCH PROJECTS	<b>Reinforcement learning for dynamic difficulty adaptation</b> Aug 2017 – Aug 2019, NTU <ul style="list-style-type: none"><li>Proposed to bootstrap policy gradient with better/worse actions to increase its sample efficiency;</li><li>Provided theoretical guarantee for unbiased convergence;</li><li>Designed and developed an online visual memory game platform;</li><li>Proposed a reinforcement learning-based algorithm for difficulty adaptation in a real-world application;</li></ul> <b>Curvature-based method for determining the number of clusters</b> Aug 2015 – Aug 2017, NTU <ul style="list-style-type: none"><li>Proposed a new method to determine the cluster number by exploiting the curvature information;</li><li>Improved prediction accuracy by 10.0% in the experiment of 20 real-world data sets;</li><li>Outperformed existing approaches in challenging datasets with hierarchical or intermixed clusters.</li></ul> <b>Understanding cooperative and competitive gameplay</b> Aug 2015 – Aug 2017, NTU <ul style="list-style-type: none"><li>Designed and developed a multi-player tablet game using Unity3D;</li><li>Conducted a user study with 40 subjects to investigate the effects of peer accountability on attention.</li></ul>

- Development of a search engine for information retrieval** Aug 2015 – May 2016, NTU
- Designed and implemented a searching application on DBLP XML dataset using Lucene, which supports the search of similar publications' venue;
  - Achieved a precision of 0.91 in binary assessment (Kappa agreement between two judgments is 0.7);
  - Proposed a new measurement to evaluate the level of similarity returned by the search engine based on the Jaccard coefficient of neighbor sets.

- SSIM-inspired rain removal with quaternion sparse representation** Mar 2014 – Jun 2015, SJTU
- Proposed the definition of structural similarity (SSIM) index in quaternion domain;
  - Devised SSIM-inspired quaternion sparse representation algorithm for rain removal;
  - Achieved improvements of 3.6 dB in PSNR and 0.11 in SSIM compared with previous methods.

AWARDS & HONORS	AAMAS Student Travel Award	2018 – 2019
	NTU Research Scholarship	2015 – 2019
	NTU MAGIC Game Design Challenge (3 <sup>rd</sup> prize Winner )	2015 – 2016
	Pan Wen-Yuan Scholarship (top 3%)	2011 – 2012
	SJTU Academic Excellence Scholarship (top 5%)	2011 – 2012
	Merit Student Honor in Shanghai Jiao Tong University (top 3%)	2011 – 2012
SKILLS	Extensive experience with Python and TensorFlow Intermediate experience with C/C++, Matlab, PyTorch Familiar with Unity3D, PHP, JavaScript, HTML/CSS, MySQL	
LANGUAGES	English (Professional Proficiency), Mandarin (Native Proficiency),	
SERVICE	<b>Reviewer</b> Information Sciences Science China Information Sciences ICONIP 2019: International Conference on Neural Information Processing IScIDE 2019: International Conference on Intelligence Science and Big Data Engineering	2016 – 2019
	<b>Teaching Assistant</b> CE/CZ3004 Multidisciplinary Design Project (MDP), NTU	2016 – 2018
	<b>Residential Mentor</b> Organized residential education activities for Hall 15, NTU	2018 – 2019
PRESENTATIONS	Bootstrapped policy gradient for difficulty adaptation in intelligent tutoring systems. AAMAS 2019, Montreal, Canada	May 2019
	MAGIC game design challenge pitch: leap-motion based game design Multi-plAtform Game Innovation Centre (MAGIC), NTU	Dec 2016