# SHANGQUN YU

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## EDUCATION

**Brown University**                                                                 *Sept 2020 - Present*
Master in Computer Science, GPA: 4.0/4.0
Selected Courses: Deep Learning (A), Reintegrating AI (A),
Design and Analysis of Algorithm (A), Collaborative Robotics (A)
**Shanghai Jiao Tong University**                                          *Sept 2015 - May 2019*
Bachelor in Computer Science, GPA: 89.4/100
Selected Courses: Operating System (96), Probability & Statistics (98),
Advanced Mathematics (90),
**Michigan State University**                                               *Sept 2013 - May 2015*
Master in Hospitality, GPA: 3.83/4
**Shanghai Normal University**                                            *Sept 2009 - May 2013*
Bachelor in Tourism Management GPA: 3.21/4

## RESEARCH INTEREST

Reinforcement Learning, Robotics Manipulation, Machine Learning

## PUBLICATIONS & PREPRINTS

- "Value-Based Reinforcement Learning for Continuous Control Robotic Manipulation in Multi-Task Sparse Reward Settings" - RSS 21 AIMR Workshop, **Shangqun Yu\***, Sreehari Rammohan\*, Bowen He\*, Eric Hsiung\*, Eric Rosen, Stefanie Tellex, George Konidaris link.

- "Bayesian Exploration for Lifelong Reinforcement Learning" - Deep RL Workshop Neurips 2021, Haotian Fu, **Shangqun Yu**, Micheal Littman (Also Submitted to ICLR 2022)

- "Exploring Improvements in Value Based Deep Reinforcement Learning for Continuous Control" - preprint **Shangqun Yu\***, Sreehari Rammohan\*, Bowen He\*, Eric Hsiung\*, Eric Rosen, Stefanie Tellex, George Konidaris

- "Learning Generalizable Behavior via Visual Rewrite Rules" - preprint Yiheng Xie\*, Mingxuan Li\*, **Shangqun Yu\***, Michael L. Littman

## SELECTED RESEARCH EXPERIENCE

**Lifelong Learning Machines**                                                        Nov 2020 - Current
*Advisor: Prof. Michael L. Littman*                                                             *DARPA*

· Co-Designed a novel Bayesian lifelong exploration method that extracts common knowledge from similar tasks;
· Implemented the algorithm on a Habitat-inspired grid world environment, which outperforms other state of the art model based algorithm such as RMAX and BOSS;
· Generalized the algorithm to the deep learning setting by using Variational Bayesian methods and Bayesian neural network to calculate a representation of the posterior conditioned on the new environment experience;
· Developed a new gym environment to test the lifelong property of the algorithm comparing with baseline lifelong algorithm.

**Value-Based RL for Continuous Control Robotic Manipulation**                      Nov 2020 - Sept 2021
*Advisor: Prof. George Konidaris, Prof. Stefanie Tellex*              *Interactive Robot Lab, Brown University*

- Explored the potential of value-based RL for learning challenging continuous robotic manipulation tasks (such as push a button, open a drawer, close down a toilet) in sparse reward settings, and empirically showed RBF-DQN converges faster than TD3, SAC, and PPO;
- Implemented a variety of off-policy enhancement techniques for RBF-DQN, including Double, Distributional, Noisy net, PER, Dueling, and proved significant improvement over the vanilla RBF-DQN.

## TEACHING EXPERIENCE

**Teaching Assistant for Learning and Sequential Decision Making**  Sept 2021 - Current 2021
*Prof. Michael L. Littman*  *Brown University*

- Co-Developed the course structure of Prof. Littman's Graduate Level Reinforcement Learning course;
- Held weekly office hours to answer students' questions about the RL course;
- Grade students' bi-weekly homework and provide constructive feedback;
- Oversaw students' final projects and provide guidance on the research process.

## WORKING EXPERIENCE

**Shanghai Homolo Technology**  June 2017 - Jan 2019
*Software Developer*

- Developed ERPs for law firms with Java, Spring, Hibernate, Mysql, HTML, CSS, Javascript;
- Designed and built a facial verification system based on pre-trained machine learning model Deepface;
- Implemented a new resumable file uploading system in the ERPs for large media files;
- Built interface to pair with a variety of external devices, such as: fingerprint reader, ID card reader, high definition file scanner.

**Shanghai Aoiin Entertainment**  May 2016 - May 2017
*Game Developer*

- Developed a first person shooter VR arcade game using C#, Unity3D and Visual Studio;
- Built a product demonstration application on Raspberry Pi using Python and Kivy library;
- Co-designed and developed the company's startup website using HTML, CSS, and Javascript;
- Collaborated on the early design of the games, prototype making, level design.

## SKILLS

**Programming skills:**
Python, C++, C#, Java, Pytorch, Tensorflow, Matlab, LaTex, HTML, CSS, Javascript.
**Extracurriculars:**
Photography, Soccer, Piano.
**Languages:**
English, Chinese.

## ADDITIONAL EXPERIENCE

**Youtube Creator**
*SimonYu*

- First native Chinese Youtuber using English to share ordinary Chinese perspective to the world,
- Advocating rule of law, freedom of expression, and human rights for Chinese.