Samson Yu Bai Jian

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EDUCATION

National University of Singapore   Singapore
Master of Computing - Artificial Intelligence Specialisation   *2022.08 - Present*
CAP: *4.40/5.00*

Singapore University of Technology and Design   Singapore
Bachelor of Engineering - Information Systems Technology and Design   *2017.05 - 2020.09*
GPA: *4.00/5.00 (Honours with Distinction)*
Focus Tracks: *Artificial Intelligence, Data Analytics*

PUBLICATIONS AND MANUSCRIPTS

*** see my Google Scholar for an always up-to-date list.

[1] Jiafei Duan*, **Samson Yu***, Soujanya Poria, Bihan Wen, Cheston Tan. PIP: Physical Interaction Prediction via Mental Simulation with Span Selection. *European Conference on Computer Vision (ECCV) 2022.* (* indicates equal contributions, same for the rest)

[2] Jiahui Huang, Yew Ken Chia, **Samson Yu**, Kevin Yee, Dennis Küster, Eva G Krumhuber, Dorien Herremans, Gemma Roig. Single Image Video Prediction with Auto-Regressive GANs. *Sensors 2022.*

[3] Jieyi Ye, Jiafei Duan, **Samson Yu**, Bihan Wen, Cheston Tan. ABCDE: An Agent-Based Cognitive Development Environment. *IEEE/CVF Computer Vision and Pattern Recognition Conference (CVPR) 2022, Embodied AI Workshop.*

[4] Jiafei Duan, **Samson Yu**, Hui Li Tan, Hongyuan Zhu, Cheston Tan. A Survey Of Embodied AI: From Simulators To Research Tasks. *IEEE Transactions on Emerging Topics in Computational Intelligence (TETCI) 2022.*

[5] **Samson Yu**, Tapas Nayak, Navonil Majumder, Soujanya Poria. Aspect Sentiment Triplet Extraction Using Reinforcement Learning. *ACM International Conference on Information and Knowledge Management (CIKM) 2021.*

[6] Jiafei Duan, **Samson Yu**, Cheston Tan. SPACE: A Simulator for Physical Interactions and Causal Learning in 3D Environments. *IEEE International Conference on Computer Vision (ICCV) 2021, Simulation Technology for Embodied AI (SEAI) Workshop (Spotlight).*

[7] Soujanya Poria, Navonil Majumder, Devamanyu Hazarika, Deepanway Ghosal, Rishabh Bhardwaj, **Samson Yu**, Romila Ghosh, Niyati Chhaya, Alexander Gelbukh, Rada Mihalcea. Recognizing Emotion Cause in Conversations. *Cognitive Computation 2021.*

[8] Jiafei Duan, **Samson Yu**, Hui Li Tan, Cheston Tan. Actionet: An Interactive End-To-End Platform For Task-Based Data Collection And Augmentation In 3D Environment. *IEEE International Conference for Image Processing (ICIP) 2020.*

RESEARCH EXPERIENCES

Agency for Science, Technology and Research   Singapore
Centre for Frontier AI Research   *2021.12 - 2022.07*
Research Engineer, Manager: **Dr. Cheston Tan**

- **Project 1**: Good Time to Ask: A Learning Framework for Asking for Help in Embodied Visual Navigation
  - Added an ask action to the action space in embodied object navigation that allows the navigation agent to get useful signals from an oracle.
  - Ran experiments for multiple oracle signals, such as progress and instance segmentation.
- **Project 2**: BOSS: A Benchmark for Human Belief Prediction in Object-context Scenarios
  - Built a dataset that helps machine learning models predict human beliefs in the form of objects during nonverbal communication.
  - Built baseline deep learning models for benchmarks.

Singapore University of Technology and Design   Singapore
DeCLaRe Lab   *2020.10 - 2021.10*
Research Officer, Manager: **Prof. Soujanya Poria**

- **Project 1**: Aspect Sentiment Triplet Extraction (ASTE) Using Reinforcement Learning (ASTE-RL)
  - ASTE-RL [5] was published in CIKM 2021.
  - Proposed a novel hierarchical reinforcement learning approach for ASTE, achieving state-of-the-art (SOTA) results.
- **Project 2**: SPACE: A Simulator for Physical Interactions and Causal Learning in 3D Environments

* SPACE [6] was published in the ICCV 2021 Workshop on Simulation Technology for Embodied AI (SEAI) as a spotlight paper.
* Developed a simulator for generating a synthetic video dataset comprising fundamental physical interactions in a 3D environment.
* Experiments show that training a SOTA physics model on the SPACE dataset and fine-tuning it on a real-world dataset in a curriculum learning approach give better results than only training it on the real-world dataset.
- **Project 3**: Recognizing Emotion Cause in Conversations (RECCON)
  * RECCON [7] was published in Cognitive Computation 2021.
  * Helped to create a dataset containing emotion causation at the utterance level through annotations and discussions.
- **Project 4**: A Survey of Embodied AI: From Simulators to Research Tasks
  * This work [4] was published in TETCI.
  * Researched and analyzed the field of embodied AI.
  * Comprehensively organized the various embodied AI simulators and research tasks, and proposed future directions for the field.
- **Project 5**: PIP: Physical Interaction Prediction via Mental Simulation with Span Selection
  * PIP [1] was published in ECCV 2022.
  * Developed a novel deep intuitive physics model for predicting the outcomes of physical interactions among objects with added interpretability through span selection.
- **Project 6**: K-EMERGE
  * Built two models and set up the data processing pipeline for question answering involving knowledge graphs to assist aerospace engineers with jet engine information.
  * Collaborated with five other teams comprising over 20 people.
  * Implemented the PullNet model successfully for 1-hop questions.
  * Edited the KinGDOM model to incorporate knowledge graphs and allow for machine reading comprehension.

Singapore University of Technology and Design — Singapore
- *Information Systems Technology and Design* — *2019.09 - 2020.08*
  Final Year Student, Advisors: **Prof. Ioannis Panageas, Dr. Hongyuan Zhu**
  - **Project 1**: Autonomous robot for shelf management
    * Built an autonomous shelf management robot that uses computer vision to identify important scenarios like out-of-stock items for my final year project.
    * Customized the YOLOv5 model for robust object detection.
    * Created a custom dataset for the supermarket use case.
  - **Project 2**: Single Image Video Prediction with Auto-Regressive GANs
    * This work [3] was published in Sensors.
    * Ran models that generated future frame predictions of facial expressions of multiple emotions.

Agency for Science, Technology and Research — Singapore
- *Artificial Intelligence Initiative* — *2019.05 - 2019.12*
  Research Intern, Managers: **Dr. Cheston Tan, Dr. Hongyuan Zhu**
  - **Project 1**: Actionet: An Interactive End-To-End Platform For Task-Based Data Collection And Augmentation In 3D Environment
    * Actionet [8] was published in ICIP 2020.
    * Created Actionet, a 3D household task dataset that can be automatically augmented with randomized positions and different image sizes.
    * Customized Allen Institute for AI's iTHOR simulator by changing initial scene configurations.

HONORS AND AWARDS

- **2022.08**: NUS MComp Study Award
- **2019.12**: SUTD ISTD Machine Learning Course Design Challenge, Winner (1/58)
- **2019.09**: Singapore-India Hackathon 2019, 1st Runner-Up (2/20)
- **2019.04**: DBS X GovTech X SUTD Smart City Challenge 2019, 2nd Runner-Up (3/17)
- **2017.05**: SUTD Undergraduate Scholarship

CERTIFICATIONS

- **2019**: AI for Industry - Practical Foundations in AI with Python
- **2019**: Data Scientist with Python (DataCamp)

TECHNICAL SKILLS

- **Deep Learning Frameworks**: PyTorch, TensorFlow, Keras
- **Programming Languages**: Python, C#
- **Additional Skills**: Linux, Git, Scikit-learn, NLTK, SpaCy, CUDA, Flask

VOLUNTEER EXPERIENCE

- **The Conference on Computer Vision and Pattern Recognition (CVPR) 2022** — Singapore
  Reviewer — *2022.01 - 2022.01*