

# Shoubin Yu

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## EDUCATION

### Shanghai Jiao Tong University (SJTU)

Shanghai, China

B.S. in Information Security / GPA 3.54/4.0

Sept. 2017 – July 2022 (Expected)

- **Relevant Courses:** Thinking and Approach of Programming, Linear Algebra, Discrete Mathematics, Software Engineering, Principles of Dataset, Operating System, Communication Fundamentals, Data Communications
- **Awards:** The Hui-Chun Chin and Tsung Dao Lee Scholar (2020), Meritorious Award for Mathematical Contest in Modeling (2019); 2<sup>nd</sup> prize in China Undergraduate Mathematical Contest in Modeling, Shanghai (2019)

### University of Washington

Seattle, USA

- **Summer Courses:** Introduction to Circuit Theory, Embedded Principles

July 2018 – Aug. 2018

## PUBLICATIONS & PATENT

- Bo Wu, **Shoubin Yu**, Zhenfang Chen, Joshua B., Tenenbaum, Chuang Gan. "STAR: A Benchmark for Situated Reasoning in Real-World Videos" *Thirty-fifth Conference on Neural Information Processing Systems (NeurIPS)*, 2021
- **Shoubin Yu**, Zhongyin Zhao, Haoshu Fang, Haisheng Su, Cewu Lu "Let Distribution Handle: Explicit Distribution Guided Human Pose Regularity Learning for Video Anomaly Detection" *Conference on Computer Vision and Pattern Recognition (CVPR)*, 2022 to be submitted
- **Shoubin Yu**, Bo Wu, Ke Xu, Tanfeng Sun, Jian Zhao. "Adversarial Video Anomaly Detection via Gradient-Embedded Substitute" *IEEE Transactions on Circuits and Systems for Video Technology (TCSVT)*, under review.
- Yi Dong, **Shoubin Yu**, Ke Xu, Tanfeng Sun, Xinghao Jiang. "Analysis Method of Bird Category Based on Yolov3 and GoogLeNet Network Model" *CN Patent Application 201911165623.3*, 2019

## PROFESSIONAL EXPERIENCE

### Research Intern, UCG Video, SenseTime (Advisor: Haisheng Su)

Shanghai, China

Project: Anomaly Region Proposal for Real-world Anomaly Event Detection

Jan. 2021 – Present

- Proposed Anomaly Region Proposal (ARP) to improve the recall of abnormal cases and detection speed in real-world abnormal event detection; Designed single-person and multi-person mode ARP to adapt different level input (video or patch).
- Raised average recall from 52% to 84% and speed up 300% on the 4 anomaly classes; Deployed ARP in the product.

### Research Assistant, IBM-MIT Watson AI Lab (Advisor: Bo Wu)

Remote (due to Covid-19)

Project: Benchmark for Situated Reasoning in Real-World Videos

Jan. 2021 – Present

- Constructed a well-controlled benchmark STAR for situated reasoning, which contains 4 types of questions and 60.5K video QAs with corresponding situation hyper-graphs and functional programs
- Specified and designed the explicit reasoning steps to answer the question by logical functional programs
- Evaluated various state-of-the-art methods on STAR; Implemented a diagnostic neuro-symbolic framework for situation reasoning which provided insights on this challenge

### Research Assistant, Machine Vision and Intelligence Group, SJTU (Advisor: Cewu Lu)

Shanghai, China

Project: Distribution Guided Human Pose Regularity Learning.

Dec. 2020 – Present

- Proposed an explicit distribution guided transformer for self-supervised human pose regularity learning; Unified conventional prediction and reconstruction tasks via mask token modeling
- Achieved state-of-the-art AUC performance on main-stream dataset (4.0% higher) and speed up 22%.

### Research Assistant, Intelligent Content Group, SJTU

Shanghai, China

Project: Multi-Modality Video Anomaly Detection Based on GAN (Advisor: Tanfeng Sun)

Oct. 2019 – Sept. 2020

- Proposed gradients perturbation embedding for efficient motion representation in a single frame, dedicated to the problem of redundant motion input for reconstruction based VAD
- Introduced a new network GES-GAN which achieved state-of-the-art performance (average 2.7% AUC higher)

### Research Assistant, National Engineering Laboratory for Information Analysis Technology

Shanghai, China

Project: Shanghai Dongtan Wetland Bird Protection System (Advisor: Xinghao Jiang).

Sept. 2018 – Oct. 2019

- Formulated a high efficiency and accuracy system that automatically detects and categorizes pictures of birds in cameras
- Achieved 98% recall of bird recognition and 75% average accuracy of bird classification by applying data domain adaption

## SKILLS

**Computational & Language Skills:** C++, C, Python (PyTorch, Matplotlib, etc.), MATLAB, PS, AI, PR, GRE 328, TOEFL 99