

Shanxiu He

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RESEARCH INTEREST	Text Generation, Event Process Completion, Vision and Language Models	
EDUCATION	University of California, Los Angeles B.S., Computer Science, Minor in Statistics	Sep 2018 - Jun 2022
WORK EXPERIENCE	NLP Research Intern, USC ISI Advisor: Prof. Jonathan May and Prof. Muhao Chen Location: Marina Del Ray, USC ISI <ul style="list-style-type: none">• <i>Goal-Oriented Event Chain Generation</i> Implemented large language models (GPT2, T5) to perform event chain sequences generation. On average, the models outperformed the state of the art statistical baseline by 3% on E-ROUGE scores. Proved the generated event sequences helpful to text generation domain in a zero-shot setting. <i>Talk: From Constrained Event Sequences Generation to Text Generation</i>	June 2021 - Sep 2021
	Engineering Intern at FENDA Technology Location: FENDA Technology, Shenzhen, China <ul style="list-style-type: none">• Developed new prototypes for user interfaces for the company's smart watches. Researched the potential developments using deep learning.	Jan 2018 - Feb 2018
RESEARCH EXPERIENCE	NLP Researcher in UCLA-NLP Advisor: Prof. Kai-Wei Chang <ul style="list-style-type: none">• <i>Grounded Situation Recognition with Vision and Language Models</i> Targeted Grounded Situation Recognition (SWiG datasets) with two types of Vision and Language Models. CLIP based model exceeded traditional computer vision models. Traditional Vision and Language approach matches previous baselines on noun predictions with 63.33% given ground truth verb while demanding much less computation costs. <i>Notes: Previous Report</i>• <i>Probing Vokenization</i> Evaluated the possible bias in vokenization paper for exploiting its additional supervision with pretrained BERT weights. Planned to analyze advantages brought by purely image priors if excluding the rich pretrained information from BERT.• <i>Summer 2020: Probing Vision and Language Models</i> Examined additional cross attention layers in LXMERT. After extracting visual and text hidden representations to perform visual Semantic Role Labeling, we concluded the additional layers might not always be beneficial.	Dec 2019 - Present
	Machine Learning Researcher in UCLA Scalable Analytics Institute Advisor: Prof. Yizhou Sun	Jan 2021 - Jun 2021

- *Graph Transformer*
Implemented Graph-Transformer architecture to represent edge level information as positional encodings to graphs. Developed strategies for Graph-Transformer such as connectivity and eigenvalue similarity. Initial results achieved 0.77 ROCAUC score on validation time.
- *OGB Dataset Development*
Discuss possible datasets and tasks to examine expressiveness and robustness of existing GNNs.

Research Collaborator with Columbia DVMM lab March 2020 - Sep 2020
Advisor: Prof. Shih-Fu Chang and Prof. Kai-Wei Chang

- *LXMERT with Scene Graph Generation*
Coordinated in generating pretrained datasets for Vision and Language models via Scene Graph Generation. I collaborated with Ph.D. students on adding Scene Graph Generation as an additional supervision to existing models.

Research Science Initiative at Tsinghua University, Beijing Jun 2017 - Aug 2017

Advisor: Professor Jun Zhu

- *SAN VQA Model*
Formulated VQA models based on CNN+BILSTM+SAN network with Tensorflow. The model outperformed counterparts with 5% test time accuracy with DAQUAR, COCO-QA and VQA datasets.

COURSE PROJECT

Improving and Probing Unified Vision-and-language Representation Model

Mentor: Professor Kai-Wei Chang

Description: Since Cross Attention layers might not fully grasp information from both vision and language, we proposed a relationship-aware Vision and Language model with additional objectives, especially Scene Graph Generation and observed increases in performance for VQA.

Notes: *Presentation*

GNN Advsarial Training

Mentor: Professor Yizhou Sun

Description: While GNNs are susceptible to adversarial attacks, we design mechanisms to perturb edge connections for GNN representations. We plan to examine the perturbed models' performance on clean accuracy and adversarial accuracy.

On the Difficulty of Utilizing Commonsense Knowledge

Mentor: Professor Kai-Wei Chang

Description: We investigated the difficulties to ground commonsense knowledge in database, ATOMIC and ASER. After showing the severity, the research provided promising prospects to tackle commonsense problems using ATOMIC.

Notes: *Report*

TECHNOLOGY SKILLS

Programming Languages: Python, R, Java, C++, C.

Technologies: Docker, Tmux, Latex.

Machine Learning: Pytorch, Pytorch Geometric, Tensorflow, Numpy, Scipy.

HONORS

International Contest China Region Finalist Award, The 3rd Annual IMMC
Upsilon Pi Epsilon, Honor Society for the Computing and Information Disciplines
Dean's Honors List

COURSEWORK Graduate-level Coursework:
CS269: Special Topic in Artificial Intelligence: Fairness, Ethics, Accountability and
Transparency in Natural Language Processing
CS263: Natural Language Processing
CS249: Graph Neural Networks
CS199: Directed Research (Spring 2020 - Spring 2021)