

# Qifeng Wu

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## EDUCATION

### Northeastern University

MS - Electrical and Computer Engineering, GPA: 3.89/4.00

Concentration on Computer Vision, Machine Learning and Algorithms

Boston, USA

Sept 2021 - Apr 2024

### University of Electronic Science and Technology of China

BEng - Communication Engineering, GPA: 3.63/4.00

Chengdu, China

Sept 2017 - Jun 2021

### University of Glasgow

BEng - Communication Engineering, GPA: 17.80/22.00

Glasgow, UK

Sept 2017 - Jun 2021

## TECHNICAL SKILLS

**Programming Languages:** Python, C++, MATLAB, SQL, R

**Software:** VS Code, Anaconda, MS Office, Blender, Premier Pro, Audition

**Operation Systems:** Windows, Linux, OS X

**Libraries and Tools:** PyTorch, Sklearn, Pandas, Numpy, Git, Matplotlib, Gradio, Huggingface Transformers, Accelerate, Open3D, Jupyter Notebook

**ML Architectures:** CNN(ResNet), Transformers(LLaMA, ViT), Multi-modality Networks(CLIP, BLIP)

**Cloud Platforms:** AWS(EC2, S3), GCP, Azure, Digital Ocean

## WORK EXPERIENCE

### Student Researcher

bitHuman Inc, MA, USA

Jun 2023 - Present

- Led the development of an innovative AI conversational pipeline integrating speech-to-text, LLM fine-tuning, quantization, and text-to-speech with voice cloning
- Employed ChatGPT to augment the training data, introducing a strategic mix of variety and adequate repetition
- Adopted a parameter-efficient method for fine-tuning the LLM, enabling it to provide desirable answers to specific questions while retaining knowledge acquired during pretraining
- Utilized an advanced network quantization technique to efficiently reduce the parameter precision of the LLM, facilitating accelerated inference without compromising interaction performance
- Integrated the fine-tuned, quantized LLM, with speech-to-text and text-to-speech modules inclusive of voice cloning capabilities to form a pipeline facilitating interactive 'chat' sessions with a customized LLM

### Intern, Data Science

Liberty Mutual Insurance, MA, USA

Jan - Jun 2023

- Developed a pipeline for text-to-image, image-to-image retrieval by integrating CLIP and FAISS
- Improved the image retrieval performance by extracting critical information from tabular data corresponding to the image set, thereby creating precise image-text pairs for the fine-tuning of the image and text encoders of the CLIP
- Fine-tuned BLIP-2 for better image captioning and visual question-answering performance on a targeted dataset, leveraging the refined model to automate and enhance the efficiency of claim report completion

## ACADEMIC PROJECTS

### Advancing Semantic Insights with LLMs in Challenging Vision Tasks

Northeastern University

Oct 2023 - Jan 2024

- Collaborated in studying the limitation of existing LLM models in challenging vision tasks such as camouflaged object detection and medical image segmentation
- Implemented a training-free framework that employ GPT-4V and CogVLM to provide extra detailed prompt to improve the segmentation performance of SAM in challenging vision tasks
- Paper submitted to ICML 2024, currently under review

### Knowledge Distillation from Foundation Model

Northeastern University

May - Sept 2022

- Adopted the foundation model CLIP to supervise the training of conventional neural networks (Resnets, VGGs) designed for image classification
- Explored properties related to knowledge distillation from foundation model to conventional model
- Submitted a paper summarizing the discovery to ICLR 2023