

# Yin Daheng

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## Education

### Southeast University

Master of Science  
Major: Network Engineering  
2020.09~2023.06

### Cambridge University

Overseas study tour  
2017.08-2017.09

### Jiangnan University

Bachelor of Engineering  
Major: IoT Engineering  
2016.09~2020.09

## Transcript

GPA(BEng) 3.59 / 4  
GPA(MSc) 81.69 / 100

## English

IELTS 6.5  
CET6 576

## Skills

Pytorch  
CUDA • TensorRT  
WebRTC • LibVPX  
Docker • Kubernetes  
Git • Github • GitLab  
LaTeX • Golang • Java

## Links

Github@yindaheng98  
Blog:yindaheng98.top

## Research & Development

### Accelerate live video super-resolution with edge computing 2021.06~currently

- Derived a parallel-friendly DNN architecture from multi-scale feature extraction structure for better multi-device acceleration in edge environment.
- Dimensionally compressed and int8 quantized intermediate features of the DNN and encoded features into video for transmission among multiple devices.
- Enhance the video decoder to combine low-framerate high-definition stream and high-framerate low-definition stream into high-framerate high-definition streams for smooth video playback when frame-by-frame super-resolution inference is not supported.
- Control the inference process adaptively based on the variable batch size of DNN input and enhanced video decoder to achieve best video quality under a specific latency bound in dynamic edge environments.
- Related paper D. Yin et al., "WAEVSR: Enabling collaborative live video super-resolution in wide-area MEC environment," is submitted to WWW 2023

## Cooperated Research & Development

### Adaptively computational routing based on environment awareness in Compute First Network (CFN) 2020.10~2020.12

- Optimize the strategy of: 1) DNN layer segmentation for distributed deployment, 2) computing device selection, 3) data transmission path selection.
- My contribution: Development of DNN inference control testbed (DNet), which can schedule and synchronize inference process among multiple computing devices.
- Related paper: X. Guo et al., "Exploiting the computational path diversity with in-network computing for MEC," 2022 19th Annual IEEE International Conference on Sensing, Communication, and Networking (SECON), 2022, pp. 1-9.

## Projects

### Contest TensorRT Hackathon 2022 Winner Prize 2022.03~2022.5

NVIDIA | Alibaba Cloud TIANCHI

- Quantize a speech recognition DNN WeNet and a super-resolution DNN ELAN to FLOAT16 and INT8 using TensorRT.
- Implement FLOAT16 BatchNorm as a TensorRT plugin to replace native TensorRT BatchNorm kernel with precision issues.
- Search and omit the quantization on those layers that have the significant impact on precision in FLOAT16 quantized ELAN structure, which decrease the error by 75% and have similar speedup.
- Quantized ELAN to INT8 with QAT, which achieved  $2\times$  speedup.
- Github: [github.com/liu-mengyang/trt-wenet](https://github.com/liu-mengyang/trt-wenet) and [github.com/liu-mengyang/trt-elan](https://github.com/liu-mengyang/trt-elan)

### Contest TensorRT Hackathon 2021 3rd Prize 2021.03~2021.5

NVIDIA | Alibaba Cloud TIANCHI

- Quantize a multi object tracking DNN FairMOT to FLOAT16 and INT8 using TensorRT.
- Implement FLOAT16 DCNv2 kernel as a TensorRT plugin, which achieved  $2.36\times$  speedup.
- Import and align model parameters from Pytorch into TensorRT through API.
- Github: [github.com/liu-mengyang/trt-fairmot](https://github.com/liu-mengyang/trt-fairmot)

## Contest & Scholarship During Undergraduate

2018.09	National College Mathematical Contest in Modeling	2nd Prize(National)
2017.11	9th National College Mathematical Contest	2nd Prize(Provincial)
2017.11	China National Scholarship (2016-2017)	
2017.05	14th Jiangsu College Mathematical Contest	1st Prize