PEI RONG NING

peirongning@stu.pku.edu.cn | peirong-ning | +86 18164014802

Education

Peking University, Master China

Computer Science of Application *Sep. 2020 – June 2023(Expected)*

- Current research interest is Video Codec and neural Image compression.

Wuhan University of Technology, Bachelor China

Computer Science *Sep. 2015 – June 2019*

- Second prize of the central China competition area in mathematical modeling.(10 %)

Experience

Research Intern April 2021 – December 2021

Tencent, TEG(Technology Engineering Group) *Shenzhen, China*

- Content Adaptive Encoding.
- Using objective indicators to improve subjective performance(VMAF) through parameter intelligent decision-making in x264, t265, vav1.With CRF and other codec parameters, achieve 90+ % prediction accuracy for VMAF.

Software Intern Jan 2022 – Present

Huawei, Hisilicon *Shenzhen, China*

- Develop original Codec based on AVS3 reference software for Codec Chips.
- Add the support for B-frame in the Codec.
- Add Angular Weight Prediction in the Codec.

Research Assistant July 2019 – Sep 2019

Peking University, Soar group

- High-speed Rail TCP
- Research on low latency congestion control in High Mobility Wireless Networking.
- Compare the state-of-the-art congestion control algorithm, and improve their performance.

Research

AVS3 fast algorithm Sep 2020 – Present

with Prof Ronggang Wang

- To reduce the possible repeated motion vector search of bi-directional prediction in inter prediction.
- Prune the motion vector search in TZ-search, reduce the possible redundant search points.
- To reduce the number of RDO for mode selection in cross component prediction TSCPM(Two-step cross-component prediction mode)(Similar to cross-component linear model (CCLM) in VVC).
- Optimize the process of transform and quantization, and choose the best quantization method for Video-Surveillance sequence.
- Optimize the Angular Weight Prediction in AVS3, bdrate gain and encoding time reduced.

End to End Neural Image Compression network Dec 2020 – Present

with Prof Ronggang Wang

- Re-design neural network structure, with better performance.
- Try transformer block and other downsampling block to get better performance.
- Reduce the bit rate of a film grain image by reconstructing complex textures from the compressed smooth image.

Coding Projects

Jpeg Codec | *C++*

- Code from zero, base on the JPEG File Interchange Format.
- Optimize the DCT with AAN(Arai, Agui, and Nakajama) DCT algorithm.

Skills

Languages: C/C++, Python
Human Languages: Chinese, English, Japanese(Junior)
Developer Tools: Visual Studio, Git, VS Code