Jing Chen

PH.D. STUDENT IN COMPUTER NETWORKING

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Education

PhD in the Institute for Network Sciences and Cyberspace *Beijing, China*

TSINGHUA UNIVERSITY *Sep. 2020 - now*

- Successive master-doctor program
- **Area of Research Experience**: Video Streaming, Multipath, Network Transport and Congestion Control, Wireless Networks

Bachelor of Electronic Information Science and Technology *Beijing, China*

TSINGHUA UNIVERSITY *Sep. 2016 - Jun. 2020*

- Understanding basic computer application theories, and the theories of Circuit and System, Signal and Information Processing, Electromagnetic Field and Microwave Technology. GPA: 3.6/4.0

Skills

Languages	C, C++, Python, Matlab, Verilog, HTML, JavaScript
ML Platforms	Tensorflow, PyTorch
Network Emulator	NS-3, MiniNet

Publications & Projects

Bidirectional Bandwidth Coordination under Half-Duplex Bottlenecks for Video Streaming *Under submission*

FIRST AUTHOR *Feb. 2023 - May. 2023*

- A rate control method that coordinates the upstream and downstream bandwidth share under half-duplex WLAN bottlenecks, to enhance the performance of bidirectionally volumetric video streaming such as video conferencing, co-host live streaming, and remote desktop.

Reduce Latency Fluctuations of Wireless Interactive Streaming with In-Flight Packet Management *Under submission*

FIRST AUTHOR *Jul. 2021 - Feb. 2022, Jul. - Sep. 2022*

- A transport mechanism that ensures the timely delivery of interactive video streams under network fluctuations. (named Backl)
- Avoid video stalls and accelerate the transmission of video frames with protective duplication on multipath.

Hairpin: Rethinking Packet Loss Recovery in Edge-based Interactive Video Streaming *To appear in USENIX NSDI'24*

THIRD AUTHOR *Nov. 2020 - Sept. 2021*

- A transport mechanism that efficiently recovers packet losses in edge-based interactive video streaming.
- A joint optimization of error correcting coding (FEC) and retransmission.

HierTopo: Towards High-Performance and Efficient Topology Optimization for Dynamic Networks *IEEE IWQoS'21*

FIRST AUTHOR *Aug. 2020 - Oct. 2020*

- An efficient algorithm to design real-time network topologies for dynamic networks (e.g., RDCN, WSN, satellite network).

Practically Deploying Heavyweight Adaptive Bitrate Algorithms With Teacher-Student Learning *TON'21*

FOURTH AUTHOR *Jan. 2019 - Apr. 2019*

- A general, high-performance, and scalable framework that can faithfully convert sophisticated ABR (Adaptive Bitrate) algorithms into lightweight decision trees to reduce deployment overhead.
- Real-world deployed in Tencent.

PiTree: Practical Implementation of ABR Algorithms Using Decision Trees *ACM MM'19*

SECOND AUTHOR *Jan. 2019 - Apr. 2019*

- The conference version of the above TON'21 paper.

Physical-Layer Informed Multipath Redundancy Optimization for Mobile Real-Time Communication

ACM APNet'21 (poster)

First Author *Mar. 2021 - May. 2021*

- An algorithm that optimizes the multipath redundancy rates to strike a good balance between low stuttering rate and high goodput for mobile RTC applications.

Always Heading for the Peak: Learning to Route with Domain Knowledge

IEEE INFOCOM'20 (poster)

First Author *Dec. 2019 - Jan. 2020*

- An improved design for learning-based routing methods, which smartly enforces routing constraints by introducing a novel decision variable.

Internship

Tencent

Shenzhen, China

Transport Optimization for Cloud Gaming *Jul. 2021 - Oct. 2022*

- Real-world deployment of two of our proposed transport mechanisms (Backl and Hairpin) into large-scale cloud gaming service (Tencent IEG START cloud gaming).

Wintone

Beijing, China

Deep Learning Research Intern *Jul. 2019 - Aug. 2019*

- High-quality handwritten Chinese character generation with neural network model.
- My design adopted a GAN (Generative Adversarial Network) model and creatively train a Chinese character classifier as GAN discriminator to improve the quality of character samples significantly.