Jiaheng Xiong

Contact Information

Dipartimento di Elettronica, Informazione e Bioingegneria,
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Research Interests

Optical communication, Quantum network

Education

MSC. in Telecommunication Engineering Sep. 2022 - Now
Politecnico di Milano, MILANO, IT

- Average Score: 28.75/30

B.S. in Telecommunication Engineering Sep. 2017 - Jun. 2021
Huazhong University of Science and Technology, Wuhan, CN

- Thesis Topic: Research on Detection Techniques for Deep Learning Systems.
- Advisor: Prof. Tao Han.

Research Experience

SPP and MGDM in optical network Mar. 2024 - May. 2024
Bonsai Lab, Politecnico di Milano Mentor: Prof. Massimo Tornatore
Evaluated the resource efficiency of Mode Group Division Multiplexing (MGDM) with shared path protection (SPP) in optical networks. On our case studies, SPP with MGDM obtains significant savings in terms of both additional backup spectrum occupation and MIMO-computing resources compared to other few-mode-transmission scenarios.

Cost in Opaque and Transparent Networks Jan. 2024 - Feb. 2024
Bonsai Lab, Politecnico di Milano Mentor: Dr. Qiaolun Zhang
Evaluated energy efficiency across various optical network architectures and devices, including ZR/ZR+ and Muxponders, for both opaque and bypass configurations. Assessed performance with traffic grooming scenarios and applied results to key network topologies like German and European layouts. This study was part of a collaborative project with Nokia for the Communication Network Design course at Politecnico di Milano, offering insights into network optimization and sustainability.

Entanglement Routing for Quantum Networks Mar. 2023 - Jun. 2023
Bonsai Lab, Politecnico di Milano Mentor: Dr. Qiaolun Zhang
Devised an innovative adaptive redundant entanglement routing algorithm specifically designed for quantum networks, with the primary objective of minimizing the average waiting time for entanglement requests. Our algorithm demonstrated a significant performance improvement, slashing the average waiting time by as much as 70% when benchmarked against existing methods.

Binocular Depth Estimation May. 2022 - Sep. 2022
Technische Universitat Munchen Mentor: Dr. Haitao Meng
Engineered a neural network model designed to predict image depth, a critical component in advancing technologies like autonomous driving. This project involved developing and training a deep learning algorithm to interpret and analyze visual data for depth estimation.

Publications

[1] **Jiaheng, Xiong**, et al. "Shared-Protected Backup Paths Assignment with Mode Group Division Multiplexing in Optical Networks" *2024 European Conference on Optical Communication (ECOC)* (Under Review)

[2] **Xiong, Jiaheng**, et al. "Adaptive Entanglement Routing for Quantum Networks with Cutoff." *2023 19th International Conference on Network and Service Management (CNSM). IEEE, 2023.*

PROJECT EXPERIENCE

Wi-Fi encrypted traffic classification based on machine-learning
Jun. 2023 - Aug. 2023 POLIMI, MILANO, Italy
Developed a real-time machine-learning classifier to detect user activities on smartphones and laptops through network traffic analysis. The system monitors traffic from a specific MAC address, extracts key statistical features at regular intervals, and uses a pre-trained model to accurately categorize activities like idle, web browsing, and YouTube streaming. This approach significantly improves user activity recognition by integrating real-time data analysis with machine learning.

Image Recognition Based on Convolutional Neural Networks
Apr. 2019 - Jun. 2019 HUST, Wuhan, China
Designed and implemented a deep 50-layer Convolutional Neural Network (CNN) within a residual learning framework to overcome the vanishing gradients issue, enabling the development of deeper network architectures. Thoroughly trained and tested on the CIFAR-10 dataset, the model demonstrated exceptional performance with an impressive accuracy of 96%, proving its robustness and effectiveness in complex image recognition and classification tasks.
Advisor: Prof. Gan Liu

PROFESSIONAL EXPERIENCE

Shenzhen HeyTap Science and Technology Ltd Sep. 2021-Mar. 2022
Display Driver Software Engineer Shenzhen, China

SKILLS

- Programming Languages: Python, Matlab, C, LaTeX
- Languages: English(IELTS:6.5, Taught in English), Chinese (Native Speaker)