Bo Yang

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EDUCATION

Eindhoven University of Technology, MSc, Cum Laude (09/2022-08/2024)
GPA: 8.5/10
Thesis: 9/10
Major: Electrical Engineering(Signal Processing System)
Relevent Courses:
Machine learning for signal processing, Computer vision and 3D image processing, Non-linear optimization, Statistical signal processing, Bayesian machine learning and infor proc

Shandong University,BSc (09/2018-07/2022)
GPA: 84.76
Major: Electronic Engineering

PUBLICATIONS

Hybrid Real- and Complex-valued Neural Network Architecture (ICASSP 2025) (under submission)

I propose the idea of how to build the hybrid real- and complex-valued neural network (HNN) architecture, also developed the HNN-specific architecture search framework to reduce the dimensionality of the network into a tailored solution. I verify the viability of the HNN in comparison to a real-valued architecture with an experiment using the AudioMNIST dataset.

SLIDING CONTEXT WINDOW POST-PROCESSING METHOD FOR NEURAL NETWORK-BASED MONAURAL SPEECH ENHANCEMENT (SLT 2024) (under submission)

We apply a sliding context window post-processing to the output of a neural network-based speech enhancement(SE) model for capturing signal context dependencies between neighboring frames. I build the neural network architecture to show that the application of a windowing function at both input and the output improves the soft mask estimation process by combining multiple estimates in different contexts.

Successive Threshold-based Multipath Mitigation aided by Neural Network for UWB Ranging, (4th IEEE International Symposium on Joint Communications and Sensing 2024)

Paper Link
I employ IMEC's existing threshold-based multipath mitigation algorithm, known as STM, and confirm that STM enhances ranging performance in multipath environments. Additionally, I propose a framework that utilizes the Channel Impulse Response (CIR) signal for range estimation, aiming to improve performance in multipath conditions by augmenting STM with a neural network architecture called STMnet. Through comparative analysis with other methods, I demonstrate that this approach surpasses the state-of-the-art.

Patent: A wireless intelligent sensor and its application

patent number: CN202110094598.5

Research Experience

NXP: [12/2023-09/2024]
Research Intern
I am a part of the ML-AI department at NXP, where my role centers around the optimization of the innovative Hybrid Complex- Real-Value Neural Network, developed by NXP. My primary focus lies within the realm of autoML and audio, particularly in areas such as Hyperparameter Optimization (HPO), Neural Architecture Search (NAS), and speech enhancement. I leverage autoML frameworks like Optuna and NNI to enhance both the architecture and other hyperparameters of the hybrid neural network. Additionally, I am actively involved in crafting automated procedures for the design of this novel network. My responsibilities extend to the development of an architecture optimization framework, followed by efforts to enhance the interpretability of the network and

apply it to specific tasks such as audio denoising and speech enhancement.

IMEC: [07/2023-12/2024]
Research Intern
In my role as a research intern with the UWB4z group at IMEC, my primary responsibility is to enhance the accuracy of range estimation and localization for UWB devices in diverse environments. I delve into the development of innovative algorithms and construct efficient neural networks to elevate the precision of UWB devices. Through a comprehensive analysis of UWB signal characteristics, I introduced a cutting-edge neural network architecture named 'STMnet'. This architecture, when integrated with IMEC's internal algorithm, resulted in a significant enhancement in range estimation performance compared to established methods. The successful outcomes of this work have been documented and published in the International Symposium on Joint Communications and Sensing 2024.

REFERENCE

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