Full Name (English):	Jiansen Zhao	Recent Photo 
Affiliation (English):	Shanghai Maritime University	

Biography+Email Address

Engaged in research and development work in maritime satellite communication, intelligent AIS information processing, radar communication antennas, Beidou antennas, and other fields. Hosted and participated in more than 20 national and provincial level projects, including the National Natural Science Foundation General Project, the National Natural Science Foundation Youth Fund, the National Key R&D Program Sub Project, the Shanghai Science and Technology Commission Key Project, the Shanghai Natural Science Foundation, the Shanghai Pujiang Plan, the Shuguang Plan, the China Postdoctoral Fund General Project, and the Ministry of Transport Basic Research Project. Published more than 60 papers, including more than 30 high-level papers with international influence, including 5 Chinese journals. Selected 4 ESI highly cited papers and authorized 4 invention patents.

Email:jszhao@shmtu.edu.cn

Speech Title (English):

Deep Learning-Enabled Beamforming and Blind Source Separation for Reliable MIoT Systems.

Speech Abstract

With the rapid development of the maritime Internet of Things (MIoT), reliable and spectrally efficient maritime communication has become increasingly critical. Recent studies on hybrid analog–digital beamforming under imperfect channel state information (CSI) employ deep neural networks such as CNN–Transformer architectures to learn constant-modulus analog beamformers. Simulation results show that the CTNN improves spectral efficiency by 69% and 85% compared with manifold optimization (MO) and orthogonal matching pursuit (OMP), respectively, and achieves a further 17% gain over a fully connected beamforming neural network (BFNN), while maintaining robustness to path-number mismatch.

Beyond transmission optimization, reliable maritime communication also requires robust signal separation in dense and interference-prone waterways. Automatic Identification System (AIS) signals often suffer from slot collisions, multipath fading, and noise interference, and their GMSK modulation weakens non-Gaussian characteristics, limiting conventional blind source separation (BSS) methods. To address this challenge, the proposed TSeq-GAN integrates a parallel CNN–LSTM architecture within a generative adversarial framework to capture spatial and temporal dependencies under nonlinear mixing conditions. Under a 5 dB SNR and varying mixture numbers, TSeq-GAN reduces MSE by at least 9.84%, improves SIR by 10.03%, and increases continuous mutual information (cMI) by 4.11%, demonstrating strong robustness and separation accuracy. Together, these two modules provide complementary transmission- and signal-level enhancements for intelligent MIoT communications.