Full Name (English):	Jiansen Zhao	Recent Photo
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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.

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Speech Title (English):

A CNN–Transformer-based Beamforming Design for Maritime Downlink Systems with Imperfect CSI

Speech Abstract

With the rapid growth of the maritime Internet of Things (MIoT), cost-efficient maritime links with high spectral efficiency are becoming increasingly needed. This paper investigates hybrid analog-digital beamforming for a maritime downlink base station under imperfect channel state information (CSI). We propose a CNN–transformer neural network (CTNN) and auxiliary beamforming-guidance loss to learn constant-modulus analog beamformers and improve spectral efficiency. Simulations show that the CTNN improves spectral efficiency by 69% and 85% over manifold optimization (MO) and orthogonal matching pursuit (OMP), respectively, and by 17% over a fully connected beamforming neural network (BFNN). The CTNN also exhibits strong robustness to path-number mismatch.