

Title: Perception Cognition Synergism for Transportation based on Multimodal Fusion

Abstract: Perceptual artificial intelligence based on deep neural networks is good at discovering correlations in data, and performs well in feature extraction, pattern recognition, target detection and tracking, and gaming with set rules, but it is difficult to autonomously discover and establish complex causal structures in data. There are significant limitations in data utilization efficiency, interpretability, solving open and general problems. We believe that the synergy of perceptual intelligence and cognitive intelligence is an important way to break through this limitation. We try to use radar, vision, speech, natural language and other multimodal data and information to develop perception-cognitive collaboration techniques, and explore its application in various tasks, such as complex traffic scene understanding, target detection in harsh environments, behavior recognition, traffic optimization, and autonomous driving decision-making.