港口微网绿色转型关键技术

Key Technologies for Green Transformation of Port Microgrid

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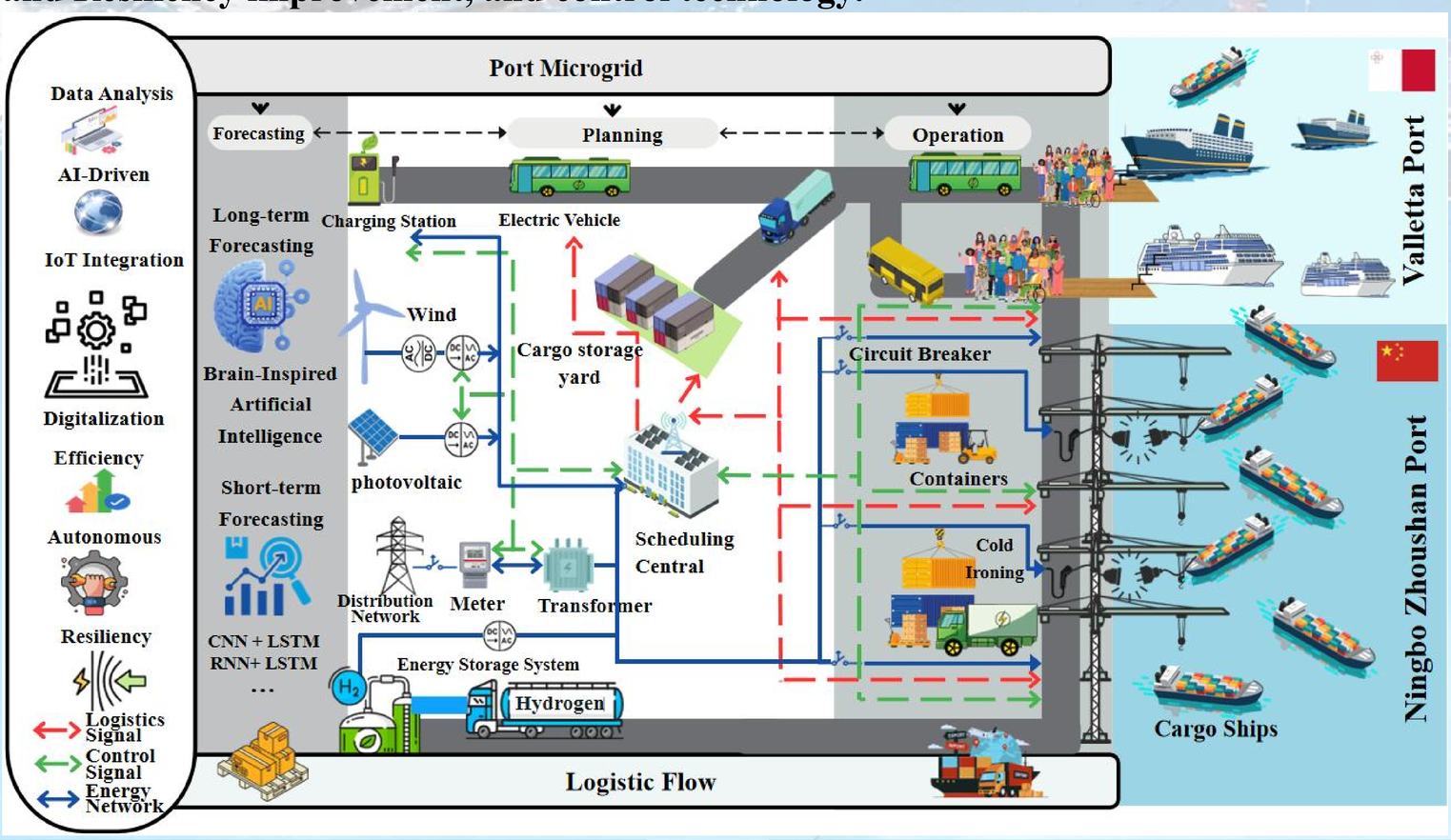
港口微网：利用港区高资源禀赋可再生能源形成微网，为港口新增负荷提供能源，以减缓港口配电网升级改造并降低碳排放。主要研究内容包括：长/短期源-荷预测、容量规划、优化运行与韧性提升、控制技术。

Port Microgrid: The abundant renewable energy resources in the port area are used to form a microgrid. This microgrid can provide energy for the new load of port, thereby alleviating the pressure on the distribution network to upgrade and reducing carbon emissions. The main research contents include: long-term/short-term source-load forecasting, capacity planning, optimal operation and Resiliency improvement, and control technology.

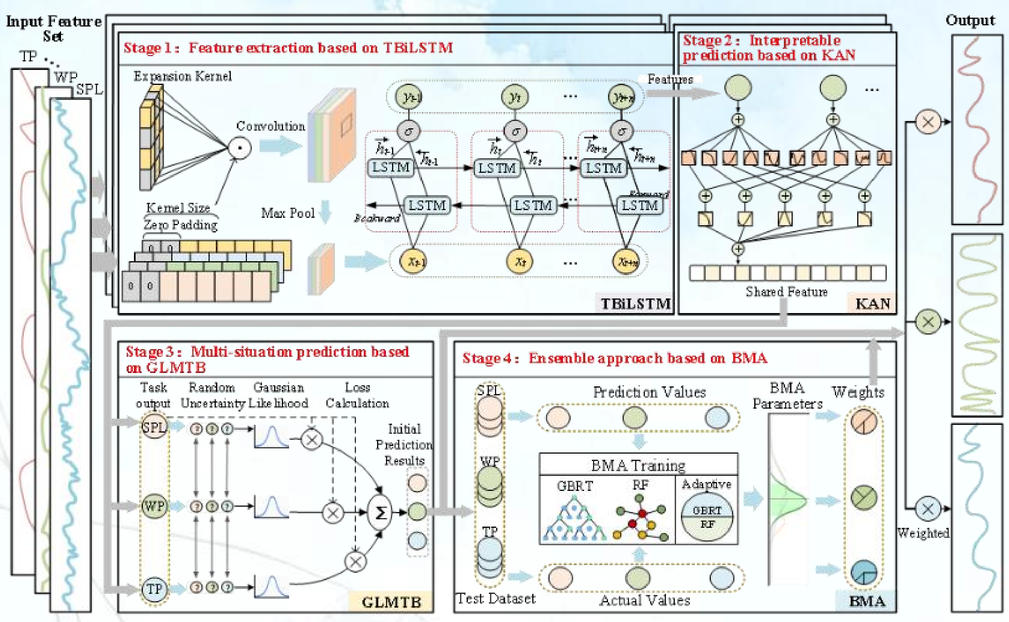


1、源-荷预测

Source-Load Forecasting

问题：考虑港口物流-能流耦合增长演进机制的微网源-荷多时间尺度预测

Multi-Time Scale Source-Load Forecasting for Port Microgrid Considering the Growth and Evolution Mechanism of Logistics-Energy Flow Coupling

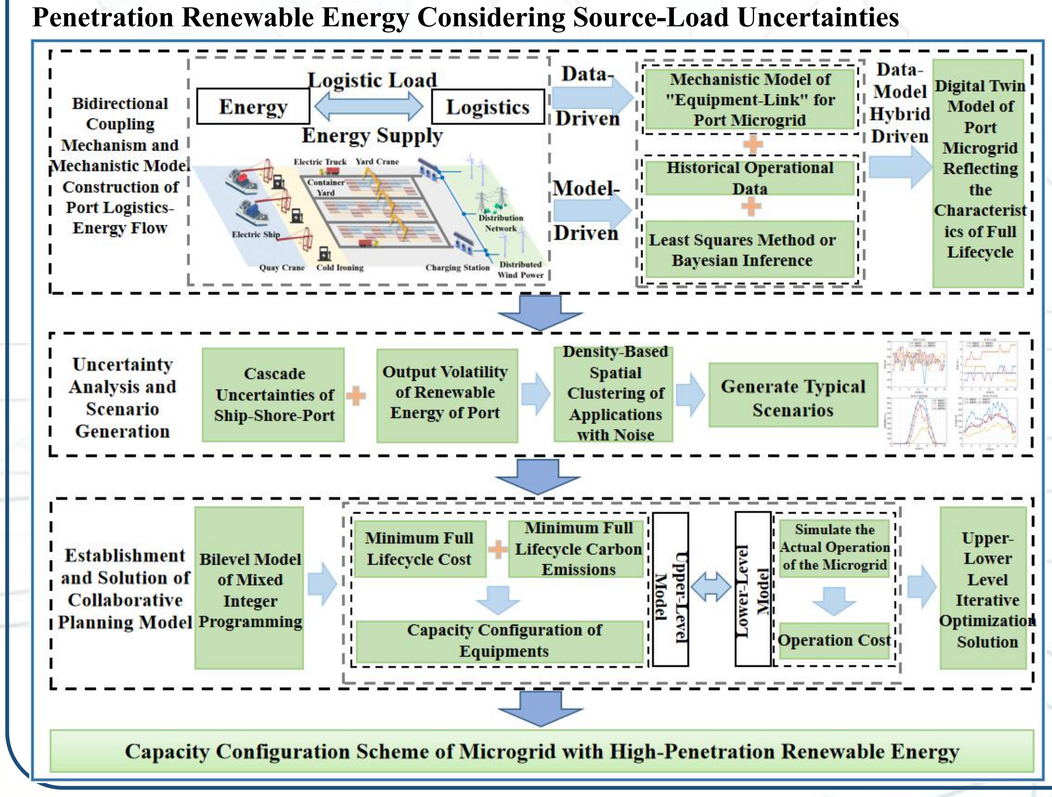


2、容量规划

Capacity Planning

问题：计及源荷不确定性的高比例可再生能源港口微网物流-能流协同规划

Logistics-Energy Flow Collaborative Planning of Port Microgrid with High-Penetration Renewable Energy Considering Source-Load Uncertainties

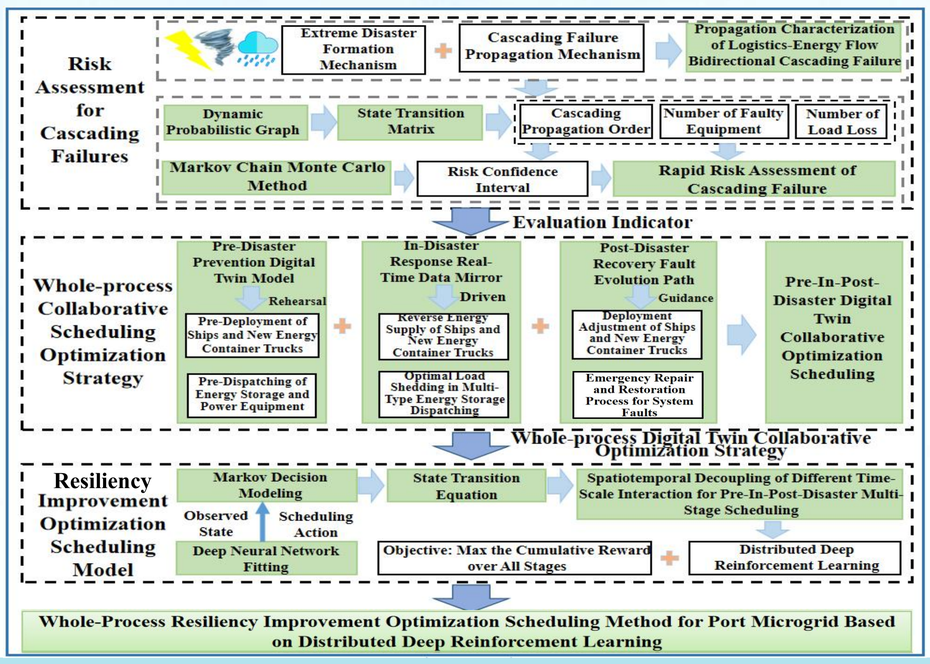


3、优化运行与韧性提升

Optimal Operation and Resiliency Improvement

问题：物流-能流协同港口微网高比例可再生能源自消纳与韧性提升优化调度

Optimal Scheduling for High-Penetration Renewable Energy Self-Consumption and Resiliency Improvement in Port Microgrids with Logistics-Energy Flow Coordination



4、构网控制技术

Grid-Forming Control Technology

问题：不同工况下港口微网交/直母线间变流器自适应构网穿越

Adaptive Grid-Forming Ride-Through Control for Interlinking Converters Between AC/DC Buses in Port Microgrids Under Various Faults