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(57) Abstract :
The invention discloses a computer system (100) for predicting power grid failures using artificial intelligence and machine learning. The system comprises a data acquisition module (110), database (150), predictive modeling engine (120), failure localization module (125), alert-generation subsystem (130), operator interface (140), and simulation module (160). By integrating real-time monitoring with predictive algorithms, the system anticipates failures, pinpoints vulnerable components, and provides corrective recommendations. This ensures proactive maintenance, enhanced resilience, reduced outages, and reliable integration of renewable energy sources within the power grid.

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