Human-Centered Decision Making for High-Stakes Applications in the Energy Sector

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This proposal seeks to explore the development of human-centered machine learning (ML) and artificial intelligence (AI) to address critical challenges in the energy sector, particularly in high-stakes scenarios such as strategic planning for grid resilience enhancement. High-stakes applications, such as responding to extreme weather events or ensuring equitable access to reliable electricity, require decision-making frameworks that are not only technically robust but also deeply aligned with human values and societal goals. The discussion will focus on designing human-aware algorithms that integrate expert domain knowledge and account for human biases, enabling AI systems to effectively complement human decision-making processes. Key themes include improving interpretability and trust in AI models, communicating uncertainty in predictions and decisions to diverse stakeholders, and ensuring that outcomes address societal disparities. Additionally, the session will seek to foster collaboration opportunities, including proposals for special issues, workshops, competitions, benchmark problems, and community outreach initiatives, with the goal of advancing both the research and practical applications of human-centered AI in the energy sector. This topic emphasizes the interdisciplinary nature of the challenge and aims to bring together experts from AI, energy systems, and the social sciences to identify actionable solutions that bridge the gap between technical innovation and human-centered design.