Special Session Proposal for the International Conference on Sustainable Computing and Communication Technologies (ICSCCT-2026) Organized at University of Malta, Msida Campus, Malta

Session Title:

Ethical and Responsible AI for Sustainability: Navigating Opportunities and Challenges

Session Chair:

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Session Description:

Artificial Intelligence (AI) and Machine Learning (ML) are reshaping not only the technological landscape but also playing a pivotal role in tackling some of the world's most pressing sustainability challenges. As AI continues to find applications in diverse sectors such as energy, transportation, agriculture, and waste management, it becomes crucial to ensure these technologies are developed and deployed in ways that are ethical, transparent, and aligned with the broader goals of social and environmental responsibility.

This special session will dive into the intersection of AI, ethics, and sustainability, focusing on how AI can be responsibly used to drive environmental conservation, mitigate climate change, optimize resource use, and promote sustainable practices across industries. The discussion will emphasize the need for strong ethical frameworks that can guide the design, development, and deployment of AI systems—ensuring their positive impact on society while minimizing risks and unintended consequences.

The discussion will cover the technical aspects of AI systems, including fairness, explainability, transparency, and accountability, as well as their broader social, environmental, and economic implications. Real-world use cases will illustrate how AI promotes sustainability, while ensuring equitable and inclusive access to AI-driven solutions for all.

Recommended Topics:

1. AI for Sustainable Development Goals (SDGs): Leveraging AI to meet global SDG targets, with an emphasis on environmental goals such as reducing carbon emissions, protecting ecosystems, and promoting sustainable agriculture.
2. AI for Climate Change and Environmental Sustainability: Detailed exploration of AI applications in climate modeling, real-time environmental monitoring, and the development of predictive systems for climate risk mitigation. This includes AI in smart grids for energy management and in optimizing energy consumption through predictive analytics.
3. Ethical AI and Bias Mitigation: Addressing the challenges of bias and fairness in AI algorithms, particularly in environmentally sensitive areas, to ensure equitable outcomes for all communities and ecosystems. This will include techniques such as adversarial debiasing, fairness constraints, and robust machine learning.
4. AI in Smart Cities and Urban Sustainability: Examining AI applications in smart cities, from energy-efficient transportation and intelligent building systems to waste management and resource allocation. We will explore AI-based systems that contribute to the creation of low-carbon, efficient, and sustainable urban environments.
5. AI for Circular Economy and Resource Optimization: Utilizing AI to drive sustainability in industries through predictive maintenance, resource management, and the design of circular economy systems. AI-enabled systems that can reduce waste, optimize material usage, and manage renewable resources will be covered.
6. AI and Renewable Energy Systems: Discussing AI technologies in energy production, particularly renewable energy sources such as solar and wind. The session will explore AI's role in improving energy grid management, renewable energy forecasting, and optimizing energy storage solutions.
7. Governance and Regulation of AI for Sustainability: Developing frameworks for the regulation of AI technologies that prioritize environmental and social sustainability. This will address legal, regulatory, and ethical challenges, such as AI governance models, accountability mechanisms, and the role of international institutions in ensuring responsible AI deployment.
8. AI in Biodiversity and Ecosystem Conservation: The use of AI in monitoring and conserving biodiversity, including tracking species populations, habitat mapping, and real-time monitoring of endangered species. AI can also help design biodiversity conservation strategies by predicting ecosystem dynamics.
9. AI in Socially Responsible Consumption: Exploring AI applications in the consumer goods industry that help reduce waste and promote sustainable consumption. This includes AI systems for product lifecycle management, waste reduction, and optimizing recycling processes.

Session Relevance:

This session is highly relevant in today's rapidly evolving technological and social landscape, where AI technologies are driving innovation but also raising important ethical concerns. As industries and governments worldwide work to harness AI for environmental and sustainability goals, it becomes crucial to establish best practices and ethical standards for its deployment. The session will explore how AI can be a powerful tool for achieving sustainable outcomes while ensuring fairness, transparency, and accountability.

The session will offer a multidisciplinary platform to discuss AI's role in addressing environmental challenges and promoting sustainability. The focus will not only be on technological advancements but also on their ethical and social implications. With expert presentations, case studies, and interactive discussions, the session will provide a valuable opportunity to pave the way for more responsible AI practices.

Session Format:

• Introduction & Keynote: Overview of the ethical challenges and opportunities in AI for sustainability. Setting the stage for the session's discussions.

• Panel Discussion: Featuring key thought leaders in AI ethics, environmental science, and policy, this panel will discuss the practical challenges in deploying AI for sustainability and share innovative solutions.

• Research Paper Presentations: Selected papers showcasing AI applications in environmental sustainability, fairness, and ethical AI. Each presentation will be followed by interactive Q&A sessions.

• Interactive Workshop: A hands-on workshop focusing on case studies and ethical dilemmas in AI for sustainability. Attendees will work on developing solutions for responsible AI deployment in sustainability projects.

• Networking & Closing Remarks: A session to foster networking opportunities between AI researchers, industry leaders, and policymakers working on sustainability challenges.

Session Goals:

• Promote Ethical AI Practices: Foster an understanding of how AI can be developed, implemented, and governed ethically to address sustainability challenges.

• Encourage Collaboration: Facilitate cross-disciplinary collaboration between AI researchers, environmental scientists, industry professionals, and policymakers to design sustainable AI solutions.

• Drive Innovation in AI for Sustainability: Explore cutting-edge AI techniques and their real-world applications in tackling critical sustainability issues.

Expected Outcomes:

• Increased Awareness: Attendees will gain a deeper understanding of the ethical issues surrounding AI and how to responsibly deploy AI in sustainability projects.

• Published Papers: All the accepted papers of ICSCCT 2026 will be published as proceedings of ICSCCT 2026 in Springer LNNS series (proposed) indexed by Scopus, Ei, WoS, and other reputed databases. Some papers will be invited to be submitted in Scopus and SCIE indexed Journals.

High-quality selected extended papers of the conference will be invited to submit for publication in the special issues of the following journals:

1. Intelligent Decision Technologies, Indexed by SCOPUS & ESCI

2. International Journal of Web Information Systems, Indexed by SCOPUS & ESCI

3. Internet Technology Letters, Wiley, Indexed by SCOPUS & ESCI

- Collaborative Partnerships: Strengthened collaborations between researchers, government bodies, and industry leaders to develop responsible AI systems that drive sustainability.
- Actionable Recommendations: The session will provide actionable frameworks and best practices for deploying AI systems in an ethically sound and sustainable manner.

Proposed Timeline:

• Session Length: 3 hours
• Time Slot: TBD
• Date: TBD

Conclusion:

This special session on *Ethical and Responsible AI for Sustainability* aims to be a platform for leading experts to discuss the role of AI in driving global sustainability goals. By focusing on fairness, transparency, and accountability, this session will contribute significantly to the conversation on how AI can be deployed for the greater good without compromising fairness, transparency, and equity.