aiGreen: Artificial Intelligence for Sustainable Living

Statement of Research Focus

Since the rise in popularity of artificial intelligence (AI), considerable research has investigated the applicability of this evolutionary technology in different industries, such as retail, shopping, fashion, social media, security, surveillance, healthcare, banking, education, and entertainment. Since machines can "learn from experience, adjust to new inputs, and perform human-like tasks" (Duan *et al*., 2019, p. 63), one of the most promising possibilities of AI is to give directions to reduce ever-increasing detrimental impacts on the planet and live more sustainably.

This session explores AI —defined as algorithms that mimic the human mind's cognitive functions to make decisions without supervision (Kirwan & Fu, 2020), for sustainable living in the context of energy consumption by incorporating environmental psychology and sociology perspectives with an approach that brings together a rich mix of perspectives drawn from different disciplines, theories, and contexts, as understanding the psychological and sociological underpinnings of human response is necessary for effective long-term AI based solutions. Dialogue at the intersection of knowledge structures will revolve around current approaches and future research directions, leading to policy implications.

AI technologies have three benefits. First, AI enables important but repetitive and time-consuming tasks to be automated, which leads humans to focus on higher-value work. Secondly, AI allows to get more detailed insights from unstructured data that are otherwise buried (e.g., videos, photos, written reports, documents, social media posts, e-mails). Lastly, AI can incorporate vast number of computers and resources and lead us to develop machine learning and find solutions to the most complex problems (Nishant *et al*., 2020). Although research in application of machine learning (ML) models to environmental and economic fields is growing, studies in social inquiry, such as climate change, energy usage, and smart cities, are fertile areas for AI focus. Consequently, AI capabilities could be leveraged to find ways to mitigate many of the environmental problems experienced. AI based systems and solutions can have a direct impact on reduced energy costs, CO2 emissions, and energy wastage, while increasing optimal mix, regeneration, and smarter product choices. Thus, we propose that AI can support the individual practices and help reduce the natural resource and energy demands of human activities. To successfully achieve this, rigorous investigation of AI solutions in the environmental sustainability context combined with human emotions, cognitions, and behavioral responses through efficient, secure, and equitable implementations is needed.

Goal of Proposed Track

This track explores AI-based solutions for sustainable living in the context of energy consumption by incorporating technological, psychological, and sociological considerations with an approach that brings together a rich mix of perspectives drawn from different disciplines, theories, and contexts. Hence, our goal is to provide a comprehensive understanding of AI-based solutions and develop a conceptual framework within the context of energy consumption. Specifically, the aim is to understand whether this branch of computer science and human-computer interaction can influence consumption patterns to achieve sustainable energy usage of consumers.

It is also important to recognize the rising ethical controversies and challenges associated with substantial and growing scope of AI systems, consumer data feeding, and the level of AI

(emotional) intelligence (Hermann, 2021; Vlačić *et al.*, 2021). This track aims to create impact by bringing insights from a broad network of interdisciplinary researchers, focused on nonprofits, governments, technology, and businesses in both developed and emerging markets, to identify, prototype, and scale solutions that engender positive consumption experiences. Therefore, our investigation of AI solutions in the energy consumption context will address all aspects of human-automation interactions including cognitive, emotional, ethical, and behavioral responses through efficient, secure, and equitable implementations.

We will explore the relevant concepts within the theoretical and problem-based contexts the participants of our session bring to the table. We expect to attract participants who are interested in sustainable consumption, AI, big data, data protection and ethics, and digital equity. Prior to the conference we invite both junior and senior researchers with an interest or expertise in these areas to join us in this research. We aim to allocate at least one place to a junior scholar. We also welcome scholars from a variety of disciplines. To encourage textured, impactful discussion, submissions of any methodology will be considered equally. The track is open to relevant external stakeholders.

Desired outcomes from this conference include the development of a conceptual paper based on findings from case analysis, recommendations for policy makers, creation of teaching cases for the TCR list-serve, and future research projects that may emerge as a result of the conference.

References

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