• **Paper / Proposal Title:**

Mood-Sensitive Spaces: Inspiration from Ambient Assisted Living and Affective Computing

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• **Abstract (300 words):**

Smart buildings are the building blocks of smart cities, employing ubiquitous computing via the Internet of Things to integrate smart capabilities into citizens’ everyday lives and spaces. These smart spaces remove the need for inhabitants to manage the minutiae of their space, from climate control to water management, but they do not offer an adaptable space based on an inhabitant’s personality or current mood. Some smart spaces are capable of monitoring their inhabitants’ states, such as in the field of ambient assisted living – where spaces monitor the residents’ state of being so that if they were to become incapacitated the smart space is able to call for assistance.

From this idea - a space that can monitor its inhabitants in case of emergency - the idea of a smart space with adaptable affective systems is born. In such a space the inhabitants’ mood and emotional state is monitored and classified from multiple sensor modalities already available in an ambient assisted living space – facial expression, gait, behaviour markers, etc. – and the space adjusts itself accordingly. For residents with
dementia, where confusion and aggression are common, the space could adjust to be more soothing by changing the intensity of any artificial light and closing the blinds. This small example could easily be adapted to help children fall asleep, or to help an inhabitant unwind at the end of a stressful day. Thus, this paper presents a unity between affective, pervasive computing and techniques from ambient assisted living to create mood-sensitive spaces that adapt to the betterment of their inhabitants. This is easily adapted to city spaces by creating a generalised mood model of a crowd – and who wouldn’t want a more relaxing subway station during rush-hour?

• Author(s) Biography (200 words each):

Liz Felton is a PhD student at De Montfort University’s Institute of Artificial Intelligence, studying on the university’s full scholarship. Her PhD research focuses on novel methods for handling computational uncertainty for mood prediction in wearable affective computing solutions for mental health management. This research follows her successful MSc project in validating the use of off-the-shelf sensors for mood prediction using time-series analysis. She has broader research interests in smart environments, technology-assisted living, and AI ethics and standards of practice. She is also a part-time lecturer in the department of Games, Maths, and Intelligent Systems at DMU, and is the staff liaison for the student-run robotics club.