Title: Systematic Literature Review on Smart Homes Using Brain Computer Interface (BCI)

Level: Bachelor/Master

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Smart homes have been an active area of research, however despite considerable investment, they are not yet a reality for end-users. Moreover, there are still accessibility challenges for the elderly or the disabled.

The number of aged and disabled people has been increasing worldwide. To look after these people is challenging. Latest communication technologies can be helpful in this regard. The smart home and medical systems are a predominant concept in research and development, specially utilizing the brain-computer interface (BCI) technology to control daily use appliances, for example. BCI acquires the brain signals that transmit to a digital device for analyzing and interpreting into further command or action. In this thesis work, you will survey BCI application targeted to smart-home environments.

Some relevant literature:

[1] Kosmyna N, Tarpin-Bernard F, Bonnefond N, Rivet B. Feasibility of BCI Control in a Realistic Smart Home Environment. Front Hum Neurosci. 2016;10:416 (https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4999433/)

[2] W. T. Lee, H. Nisar, A. S. Malik and K. H. Yeap, "A brain computer interface for smart home control," 2013 IEEE International Symposium on Consumer Electronics (ISCE), Hsinchu, 2013, pp. 35-36 (https://ieeexplore.ieee.org/document/6570240)

[3] Syed Rehan Abbas Jafri, Tehreem Hamid, Rabia Mahmood, Muhammad Asjad Alam, Talha Rafi, Muhammad Zeeshan Ul Haque & Muhammad Wasim Munir, “Wireless Brain Computer Interface for Smart Home and Medical System”, Wireless Personal Communications volume 106, pages2163–2177(2019), (https://doi.org/10.1007/s11277-018-5932-x)

[4] Masood, Muhammad Hammad et al. “BRAIN COMPUTER INTERFACE BASED SMART HOME CONTROL USING EEG SIGNAL.” (2016).