

Machine Learning and Regression

Modelling of Dynamic Urban Soundscapes

Andrew James Mitchell

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Institute for Environmental Design and Engineering
University College London (UCL)

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Principal Supervisor: Prof. Jian Kang

Co-Supervisor: Dr. Phil Symonds

Abstract

List of Studies

This doctoral thesis is based on the following studies:

Commentary: Kang, J., Aletta, F., Oberman, T., **Mitchell, A.**, Erfanian, M., Tong, H. (2021). Fuck the decibel. *Nature Sustainability*.

Protocol: **Mitchell, A.**, Oberman, T., Aletta, F., Erfanian, M., Kachlicka, M., Lionello, M., & Kang, J. (2020) The Soundscape Indices (SSID) Protocol: A Method for Urban Soundscape Surveys – Questionnaires with Acoustical and Contextual Information. *Applied Sciences*, 10 (7), 2397. <https://doi.org/10.3390/app10072397>

Study I: Erfanian, M., **Mitchell, A.**, Aletta, F., & Kang, J. (2020). Psychological Well-being, Age and Gender can Mediate Soundscapes Pleasantness and Eventfulness: A large sample study. *Environmental Psychology*.

Study II: Orga, F., **Mitchell, A.**, Freixes, M., Aletta, F., Alsina-Pagès, R. M., & Foraster, M. (2021). Multilevel Annoyance Modelling of Short Environmental Sound Recordings. *Sustainability*, 13(11), Article 11. <https://doi.org/10.3390/su13115779>

Study III: **Mitchell, A.**, Oberman, T., Kachlicka, M., Aletta, F., Lionello, M., Erfanian, M., & Kang, J. (2021). Applied Predictive Soundscape Modelling: A Case Study Investigating Changes from the COVID-19 Lockdown. *JASA*.

Study IV: **Mitchell, A.**, Soelitsyo, C., Erfanian, M., Xue, J-H., Oberman, T., Kang, J., & Aletta, F. (2021). A Temporal Convolutional Neural Network for Multi-label Environmental Sound Recognition and Annoyance Detection. *IEEE*.

Commentary: **Mitchell, A.**, Aletta, F., Chalabi, Z., & Kang, J. (2021). From Deterministic to Probabilistic Soundscapes: A critical tour around the soundscape circumplex. *JASA-EL*.

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1.2 Current Methods of Assessing and Addressing Urban Noise

1.3 Soundscape - Theory and Application

1.3.1 Soundscape Descriptors and Indices

(Aletta et al., 2016)

1.3.2 The ISO 12913 Standard Series

1.4 Environmental Acoustics and Psychoacoustics Analyses

Bibliography

Aletta, F., Kang, J., and Axelsson, Ö. (2016). Soundscape descriptors and a conceptual framework for developing predictive soundscape models. *Landscape and Urban Planning*, 149:65–74.