

TESIS

EXPLORATION OF HUMAN PERCEPTION IN URBAN AND RURAL SOUNDSCAPES THROUGH EEG-BASED MEASUREMENT



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Exploration of Human Perception in Urban and Rural Soundscape
through EEG-Based Measurement

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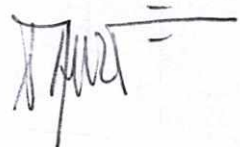
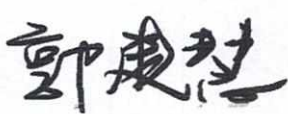
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Saya bersedia menerima sanksi yang berlaku sesuai peraturan di Program Studi Magister Arsitektur Universitas Atma Jaya Yogyakarta jika di kemudian hari ditemukan bukti yang memberatkan bahwa saya melakukan plagiasi sebagian atau seluruh hasil karya seni ini. Saya paham bahwa gelar dan ijazah yang saya terima dapat dinyatakan batal dan harus dikembalikan kepada Universitas Atma Jaya Yogyakarta.

Demikian surat pernyataan ini saya buat dengan sebenar-benarnya, sungguh-sungguh, dan dengan sepenuh kesadaran serta kesediaan untuk menerima segala konsekuensi-nya.

Taipei, 18 July 2025

Yang menyatakan,



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PREFACE

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ABSTRACT

Soundscape is the acoustic environment as perceived in a specific context, shaped by place, time, and culture (ISO 12913-1, 2014). Unlike noise studies that focus on unwanted sounds, soundscape research explores how people interpret and emotionally respond to everyday auditory environments. Urban and rural areas present distinct sound profiles, urban parks often include traffic and human activity, while rural parks feature more natural elements. These differences impact well-being, yet studies using objective tools like EEG to assess soundscape perception remain limited. This study examines how people respond to soundscapes in urban and rural parks using EEG and subjective soundscape assessments. Ten participants listened to recorded park soundscapes while their brain activity was measured, focusing on Theta (4–8 Hz), Alpha (8–12 Hz), and Beta (12–25 Hz) waves. Questionnaires were used to evaluate perceived attributes and preferences. Results show that Theta waves, linked to deep relaxation, were more active during rural soundscapes, while Alpha waves, associated with calm focus, appeared more during urban soundscapes. Participants perceived rural parks as more calming and restorative, while urban parks were seen as lively but still comfortable. These findings suggest that different acoustic environments evoke distinct mental states and emotional responses. Incorporating natural sound elements especially in urban contexts can enhance the restorative quality of public spaces and improve user well-being.

Keywords: Soundscape, Urban Park, Rural Park, EEG, Perception

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