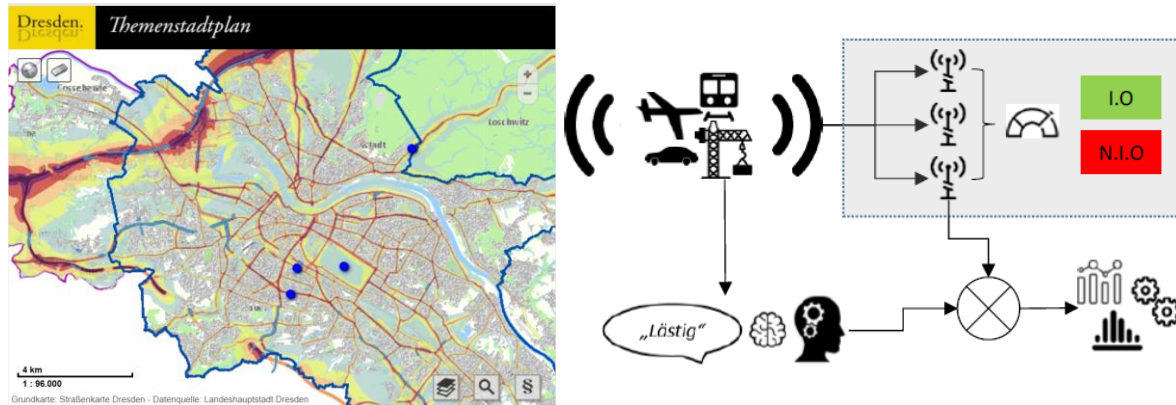


Studienarbeit / Diplomarbeit

Psychoacoustic Evaluation of Environmental Noise



In accordance with EU environmental noise directives, member states are required to produce strategic noise maps every five years and to estimate the number of people exposed to environmental noise in urban areas. These estimates serve as the basis for identifying hotspots and implementing mitigation measures where exposure levels are high.

These noise maps are typically generated through acoustic simulations and include energy-based indicators such as L_{den} or L_{dn} . However, according to findings in psychoacoustics, purely energetic indicators may not fully capture how people perceive and evaluate noise annoyance in real environments.

This study aims to investigate whether psychoacoustic parameters — Loudness, Sharpness, Roughness, Fluctuation Strength, and Tonality — can better explain perceived annoyance compared to conventional energy-equivalent noise metrics (L_{den} , L_{dn} , L_{Aeq} , etc.), based on field measurements and controlled listening experiments.

Following points can be defined as the milestones:

- Literature review on relevant standards, directives, and psychoacoustic theory
- Evaluation of Dresden's noise maps, selection of recording points, and field measurements
- Analysis of recordings, calculation of acoustic and psychoacoustic parameters
- Creation of stimuli, conducting listening experiments and questionnaires, and evaluation

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