EBERHARD KARLS
UNIVERSITÄT
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Mathematisch-Naturwissenschaftliche Fakultät
Fachbereich Informatik
Kognitive Systeme (Prof. A. Zell)

Bachelorarbeit

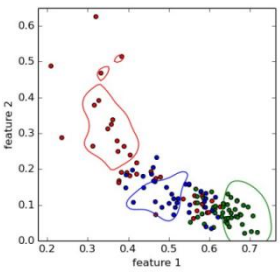
Soil classification using plate acceleration signal

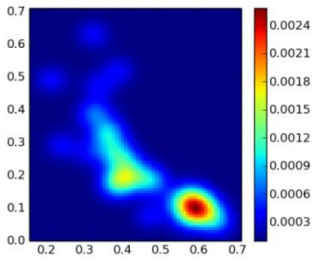
Machine compaction is an artificial technique for hardening and compacting soil in a limited time. The compaction process allows improving the bearing capacity of the subgrade and the mechanical properties of the soil. The Musketier project focuses on vibratory plates instruments for compaction which transmits the force to the subgrade by the interaction of both the vibrating plate and the soil. The degree of compaction is thus highly dependent on mechanical properties of the soil. The goal of the Musketier project is to enhance intelligent compaction through recovering of soil parameters using signal classification. The proposed method to achieve this can be divided in two steps. First features are extracted from plate acceleration signal and then machine learning techniques are used to perform soil classification.

The goal of this bachelor thesis is to test classification performance using different machine learning methods such as Support Vector Machine (SVM) and Random Forest. In order to perform this task we propose to use the machine learning library Weka along with Python codes. Results should eventually be compared to Bayesian classifiers.

Requirements:

- Knowledge in machine learning
- Python programming skills





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