

# Mode of transportation and ground property detection using accelerometer and gyroscope data from a Smartphone

Theodor Mser Sebastian Klamt E-mail: theodor.mser@stud.uni-goettingen.de,  
sebastian.klamt@stud.uni-goettingen.de

**Abstract**—The abstract goes here.



## 1 PROJECT DESCRIPTION

THE goal of our project is to gather various information from the gait of a person using the accelerometer and gyroscope of a normal Smartphone. Foremost the aim is to identify persons by their gait as well as their way of carrying the phone. The different ways of carrying the phone will be classified by the piece of clothing the phone is stored in like different trousers pockets and jacket pocket as it has been done before in various papers like [7]. Also we want to differentiate the mode of their gait to get information about whether a person is standing still, walking or running, as well as on a flat surface, uphill or downhill. There are papers like [8] already using not only flat surfaces but more interesting and usual settings like ways including stairs and corners in hallways. Therefore a focus of this project will be to gather information about the quality of the underground the person is walking on, deciding if it is hard ground (beton/asphalt) or soft ground (grass/dirt/mulch).

To gather the necessary data we will use an app on a samsung S3 smartphone programmed in Python using Kivy <http://kivy.org/#home>. The rate of measurement is about 40 measurements per Second. The accelerometer used in the Samsung S3 is the LSM330DLC. The data will consist of a list of timestamps and the according values for the accelerometer and gyroscope values in three dimensions. Since the smartphone can not provide a realtime

environment for measurements the measured values will be slightly irregular.

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