



## AUFGABENSTELLUNG FÜR DIE BELEGARBEIT

Name, Vorname:	Hegde, Subray Shreekumar		
Studiengang:	DSE	Matrikelnummer:	5120604
Forschungsgebiet:	Energy Lab	Forschungsprojekt:	
Betreuer:	PD. W. Dargie		
Verantwortlicher Hochschullehrer:		PD. W. Dargie	
Beginn am:	01.07.2024	Einzureichen am:	31.12.2024
Thema:	Uniquely identifying persons based on their walking		

### ZIELSTELLUNG

The human voice has some fascinating properties. For example, despite stress or excitement or age, it is possible to identify human beings based on their voice. Today computers are able to discriminate between persons based on their voice. It is interesting to immediate this type of discernment based on the walking pattern of human beings. Similar to the external and internal circumstances which may affect the pitch, frequency, and other properties of a human sound, their walking can be affected by different internal and external conditions, including walking speed, the floor upon which human beings walk, and the shoes they wear. The aim of this thesis is to employ supervised machine learning to uniquely identify human beings based on their walking.

### RESEARCH FOCUS

The work requires both theoretical and experimental contributions, but the primary focus is on the experimental aspect. Particularly, it requires the following steps:

- 1) Solid theoretical knowledge in machine learning, statistics, and estimation
- 2) Review of state-of-the-art
- 3) Definition of expressive features which will serve as inputs to the model (such as a convolutional neural network). This includes the investigation of the suitability of some of the most widely employed features in speech recognition.
- 4) Practical setup, analysis, and test of the model.
- 5) Publication of results is a clear indication of the success of the thesis.

Unterschrift des verantwortlichen Hochschullehrers  
Dr.-Ing. habil. Waltenegus Dargie

Unterschrift des Students