

Univ.-Prof.<sup>in</sup> Dr.<sup>in</sup>  
**Cristina Olaverri Monreal**  
Lehrstuhlinhaberin Nachhaltige  
Transportlogistik 4.0

T +43 732 2468 5490  
[cristina.olaverri-monreal@jku.at](mailto:cristina.olaverri-monreal@jku.at)  
[www.jku.at/its](http://www.jku.at/its)

Sekretariat:  
**Oliver Bartenstein**  
DW 5491  
[oliver.bartenstein@jku.at](mailto:oliver.bartenstein@jku.at)

# MASTER THESES



# TEMPLATE FOR SCIENTIFIC WORKS

## Table of Contents

I. Domain Adaptation. ....	3
A. Research Idea .....	3
B. Research Questions. ....	3

## **I. Domain Adaptation.**

### **A. Research Idea**

Currently many systems rely on machine learning approaches to make predictions from complex data. These approaches need a high density of labelled data with which to train and validate their models. However, the acquisition, processing and labelling of data is time consuming, prone to human error and requires many experiments in real environments that are not always accessible.

On the other hand, many approaches make use of simulations which enable an easier collection of labelled data in desired environments. However, models trained on simulated data is prone to fail to generalize on real environments. Domain adaptation permits machine learning models trained on a source domain to generalize on a target domain. In this way models trained with synthetic data can be used with real data.

Therefore, the goal of this thesis is to utilize domain adaptation approached to generalize collected data from the provided Simulator on real data. To this end, the thesis should focus on Generative Adversarial Network approaches and the scope of the model to adapt can be selected between lane change prediction, object detection or pedestrian movement classification.

### **B. Research Questions.**

- How can be minimized the distribution shift between the predictions on synthetic data and real data?
- Which is the benefit of using GANs to adapt a model trained on one source domain to a target domain?