Report Template

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ABSTRACT

Pedestrians trajectories prediction has become a popular topic in recent years. Many approaches can be used to accomplish the prediction, including deterministic and non-deterministic ways. In this report we make research and discussion about how to use the a non-deterministic method i.e. deep learning to solve the prediction problem. The algorithms we are going to use is the combination of SocialGAN and InfoGAN. First we train a model by the adopted algorithms. Second, during the research, we propose our research questions and try to answer it in the report.

INTRODUCTION

Systems and electronic devices that using pedestrian trajectories prediction can be found everywhere in our daily life, e.g., service robots, automatic drive and city planning etc. Hence, it is useful and important to make predictions about pedestrians movement. Many researches proposed miscellaneous approaches that tackle this problem. Helbing and Molnar [5] propose the Social Force model. Yi [6] introduces factor of stationary group to modeling of pedestrians trajectories with an energy map. The aforementioned ways are deterministic ways for prediction, they can not utilize the valuable information in the trajectories data.

Over the last few years,following the widely usage of machine learning and deep learning, researchers use various neural networks to tackle the trajectories prediction problem. In Altché [2] proposes a method that predict the trajectory on highway using LSTM. Alahi [1] gives a sequence model based on LSTM as well as a social pooling which aggregates the human-human interaction in a scene. Gupta [4] uses Generative Adversarial Networks(GAN) and a Pooling Module which takes the social interaction into account to predict socially acceptable trajectories. Amirian [3] proposes a model that consists of GAN and Attention Pooling to predict the multi-modal distributions of pedestrians trajectries.

Even though these researches give various effective models that fulfill the prediction task, they didn't give the research on the most of the factors that affect the trajectories. There are a lot of factors that may have influence on the pedestrians, e.g. destinations, directions, velocities, social scenes and social groups. The factors play an important role in prediction. If we know the control factors that affect pedestrians trajectory, we can apply the factor in specific scenarios, which improves the performance of the deep learning algorithm and the model.

In this research report, we first propose our research question: what and how many factors can we obtain from the data? From this question, we define our report in the following sections. Section 1 gives the problem statement, which demonstrates the method we use in the model. In section 2, the well-know datasets UCY and ETH are chosen and pre-processed. In section 3, we train a model and test our model on the test data. In section 4...

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1 PROBLEM STATEMENT

Appendices

If your work needs an appendix, add it before the "`\end{document}`" command at the conclusion of your source document.

Start the appendix with the "`appendix`" command:

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and note that in the appendix, sections are lettered, not numbered. This document has two appendices, demonstrating the section and subsection identification method.

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A RESEARCH METHODS (REMOVE IF NOT USED)

A.1 Part One

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