



## Thesis Progress

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### Anomaly Detection in People Counting Using EAS Gate Sensors

Using machine learning models for detecting anomalies in people counting from the data of electronic article surveillance (EAS) systems. The most common problem with using EAS gates, at store entrances for people counting, is the phenomenon when two or more people are passing the gates at the same time and the system counts them as one. This can cause multiple problems for companies like under-stuffing, having an incorrect conversion rate, or other metrics and Key Performance Indicators (KPIs).

The purpose of this thesis is the creation of a machine learning model that detects these anomalies (mistakes) of the EAS systems ,and if possible making another model that will be able to understand or predict the real number of people entered through the gates.

### 1 Progress week 2, 18/05/2025 - 25/05/2025

Firstly, I added more references and corrected the incomplete references. Read more about which models could be used for the purpose of my research in my thesis. Some of the possible models I could be using are Isolation Forests, Autoencoders, or One-Class SVM,mainly for Anomaly Detection.

I also got a sample dataset that contains some of the data that will be available to me from the company that I am currently doing my internship in. It seems that I will be able to have the data of the last two years until now, but the information they contain is restricted. Data will be provided on how many people **entered** and **exited** the store each hour. If that is all the information I manage to get, my options about making a good or useful model and also the options of how I can use the models will be restricted.

Moreover, I started writing part of my thesis. I am writing to describe the way I am going to approach the subject. What models are going to be used, what I am aiming to find, compare different models, and find which one is better for the specific problem. It is yet in an early stage.

Below are the references with the new additions: -More are probably going to be added-

[11] [3] [8] [4] [9] [6] [7] [2] [1] [10] [5]

## References

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