Capstone Project Proposal: Gender face recognition

Zuzanna Kostecka 420833
Piotr Lichota 418914

Data Science Consulting Approach
Faculty of Economic Sciences,
University of Warsaw
April, 2024

Introduction

In the ever-evolving world of retail, every square foot of space counts. As stores strive to maximize efficiency and profitability, the layout becomes a critical factor. Take a typical clothing store, for example. It's often divided into sections for men and women, each carefully curated to cater to specific tastes and preferences. By utilizing the power of gender recognition technology, we're aiming to revolutionize the way stores optimize their layout. Instead of relying on intuition or guesswork, we'll provide data-driven insights to help retailers make informed decisions about space allocation. It's not just about improving the shopping experience; it's about driving results and staying ahead in an increasingly competitive market.

Objectives:

- Develop a model that classifies the gender with high accuracy.
- Evaluate the model performance comparing it to already developed solutions.
- Explore the usability of the model, interpret its advantages and disadvantages comparing to alternative approaches.
- Investigate ethical considerations, including privacy, bias associated with deploying deep learning models in actual stores.

Methodology:

1) **Literature review** – we find most recent literature, both with models employed and discussions on application in real world.
2) **Data acquisition** – data used for the model training and evaluation comes from Kaggle. It contains 27 167 .jpg files for both groups.
3) **Data preprocessing, model development and model evaluation** – we are going to optimize the input data size for appropriate relation of information to the time-consumption of the modeling part. Utilize ***TensorFlow Keras*** and ***scikit-learn*** for model development, leveraging neural network architectures.
4) **Interpretability analysis and ethical considerations** – we seek to deeply understand the model's mechanisms to explain them to stakeholders in a comprehensive manner. We will address crucial implementation factors while considering ethical implications related to privacy and bias.

Tools:

- Development of our model will be held on **Python**.
- Effective cooperation is going to be boosted with utilization of **GitHub** repositories.
- Final project deliverable will be presented using PowerBI, as well the PowerPoint presentation.