Introduction

Various services require verifying the age or identity of a customer. This tedious task is prone to human error. Machine learning has developed far enough to enable super-human quality and speed in identity and age verification. MARKUS makes this a reality.

Problems

- Human eye is not accurate enough
- Fraud
- Identity thefts
- Fake documents
- On-boarding process takes too long
- Errors in information input
- Workforce is expensive
- Penalties for faults

Solution

- Automatically detects the age of people from video feed
- Check validity of documents
- Conducts identity verification by comparing face with the one on the document
- Parses information from documents
- Speeds up the process

Technology stack

Multiple convolutional neural networks accelerated by CUDA, cuDNN and GPUs for face localization, comparing facial similarity and age prediction.

Feature matching and homography are used for initial document localization and document type validation. Security elements are found using UV-imaging scanners to verify the validity of documents.

Queries to national registries for doing background checks.

OCR technologies for parsing the document.

Third party solutions have been integrated for detecting facial movements as a liveness check.

The service is built using a distributed message queue to distribute workload between multiple GPU equipped machines.

Use cases

Identity verification:
- Customer service for contractual clients
- Financial sector
- Insurance sector
- Border points
- Airports

Age verification (purchasing goods illegal for minors):
- Self checkouts in supermarkets
- Vending machines
- Delivery robots

Sample application with partial capabilities: https://markus.mindtitan.com/student_project