Problem & Motivation

- **Problems**
  - Human trafficking is a huge problem for national security.
  - Many people rescued have no identification documents, but most carry a smartphone.
  - Sending smartphones to a lab for analysis takes too much time and removes most forms of communication for these people in distress.

- **Research Tasks**
  - Identification of individuals based on data found on a person’s smartphone
  - Detection of unattended minors through analysis of images taken in the field and other sources
  - Analysis of trends and used routes by anonymizing and aggregating available location data
  - Gather information about the trafficker

Testing and Integration

The tests are heavily integrated into the ongoing efforts of both the BMI (Austrian Ministry of the Interior) and the Bundespolizei (German federal police) against human trafficking. This allows to rapidly integrate and fix features, so that officers working with the software get the optimal solution. Further, this makes it possible to use real data for tests and correctly adjust the used technologies for detection without having access to the data.

- **In the Field**

  Officers in the field need a quick overview of the data on the phone. Primary focus is on identifying documents like passports; the extraction also contains location data, which is important for strategic evaluation like trend and route analysis.

- **In the Lab**

  In the lab, an automated and fast routine is beneficial to keep devices as briefly as possible. Further, current processes are mostly manual, thus an extensive preliminary report can free resources for more and faster analyses.

Keypoints

- Various data sources from the provided smartphone
  - Phone numbers, contacts, text messages, images, device-specific data, location data, documents, connected WiFi
- Techniques to spot relevant data while omitting irrelevant
  - Machine Learning as in image recognition, text and dialect detection, document detection (e.g. passports)
- Age estimation based on images
  - Experimental checks to determine the age range of an individual (below 13, below 18, above 18).
- Cross-checks between multiple cases
  - Finding common identifiers to highlight potential traffickers, e.g., one and the same phone-number on n analysed smartphones.
- Testing during the development
  - Both the BMI and the Bundespolizei heavily test the application in the field to ensure features work as intended and help effectively.
- Extensive ethical and legal guidance
  - Established guidelines how this project can effectively protect the individuals’ privacy while providing valuable insights.

Trends and Routes

Through manual export, strategic evaluation can be provided based on location data from multiple cases. This data is anonymized through various techniques.

**Figure 1**: Demonstration of the trend and route analysis based on generated data

Conclusion

- SmartIdentification reduces the time needed per case by providing information, but leaving the decision responsibility with the officer in charge.
- People in distress get their smartphones back in a more reasonable time, as an extensive analysis in the lab is less often necessary.
- Valuable location data can be collected, providing better understanding of trends during transit and the used routes.