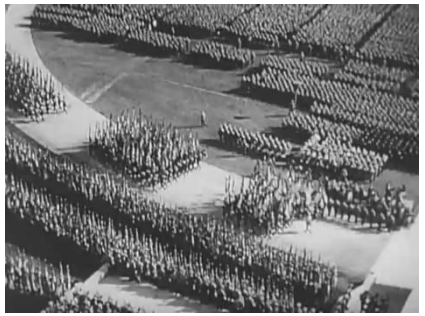
Project 01a: Shot Type Classification - A fundamental base for automatic video analysis

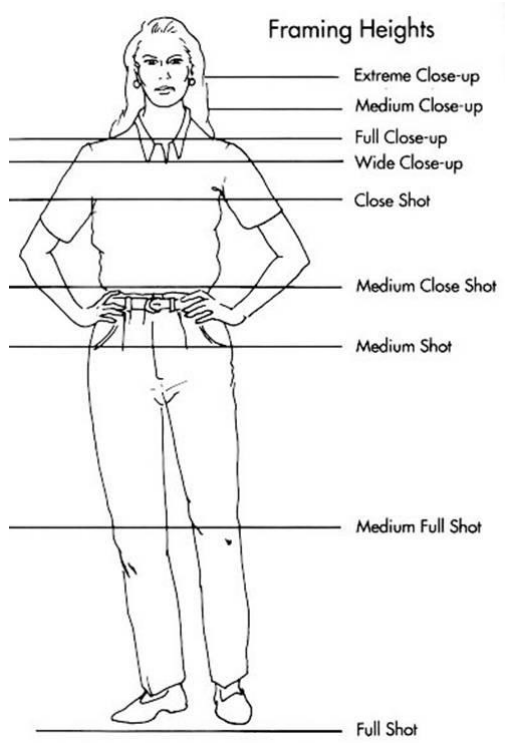
Objective:

- Classification of video shots (short image-sequences)

  Extreme-Long-Shot (ELS), Long-shot (LS),

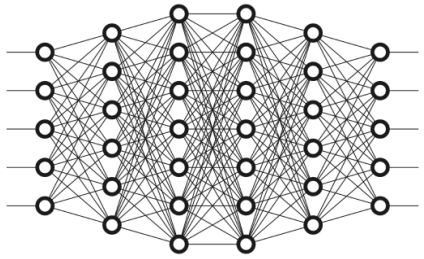
  Medium-Shot (MS), Close-Up Shot (CU)





Doings:

- Literature review (papers, Github, …)
- Implementation of own solution (e.g. CNN+LSTM)
- Evaluation and comparison to state-of-the-art approaches
- Readable and documented source-code
- Usable software
- Final report + presentation



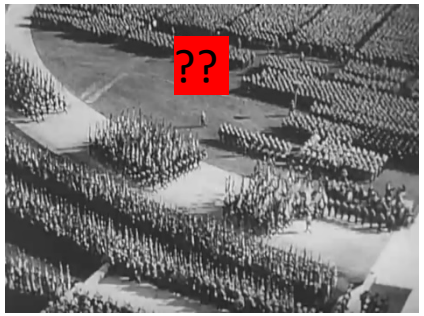
Project 01b: Shot Type Classification - A fundamental base for automatic video analysis

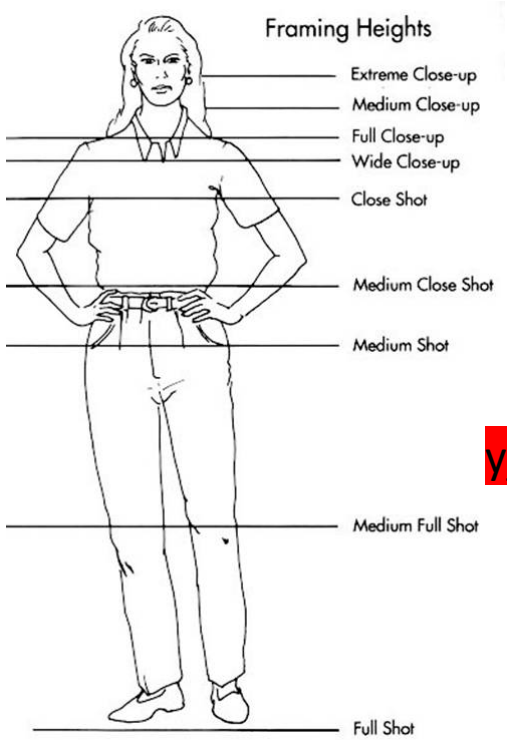
Objective:

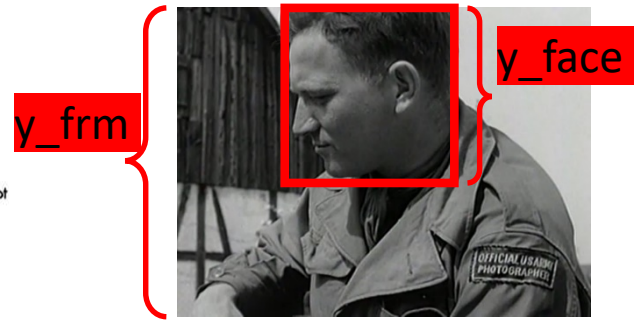
- Classification of video shots based on face-frame ratios

Doings:

- Literature review (papers, Github, …)
- Implementation of own solution
  - Face detection
  - Prediction of shot types based on face-frame ratios
- Evaluation and comparison to state-of-the-art approaches
- Readable and documented source-code
- Usable software
- Final report + presentation







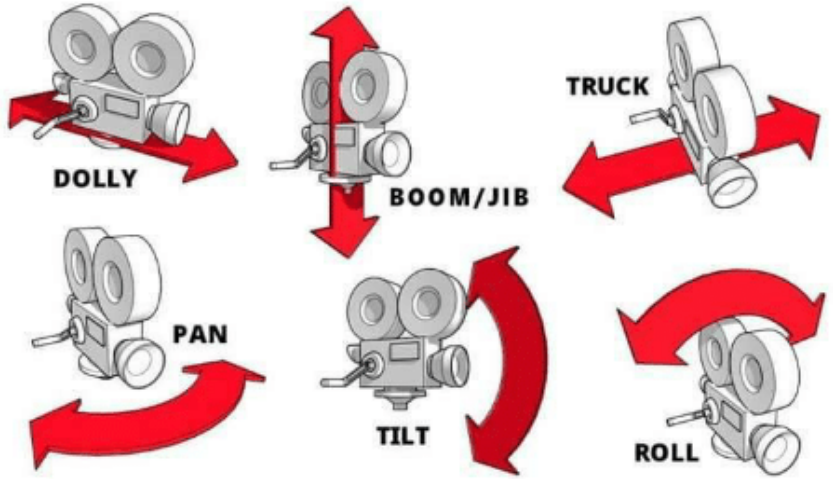
Project 02: Camera Movement Classification: A fundamental base for automatic video analysis

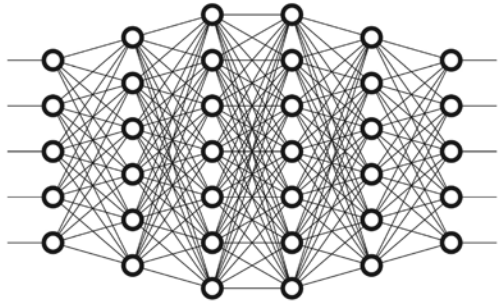
Objective:

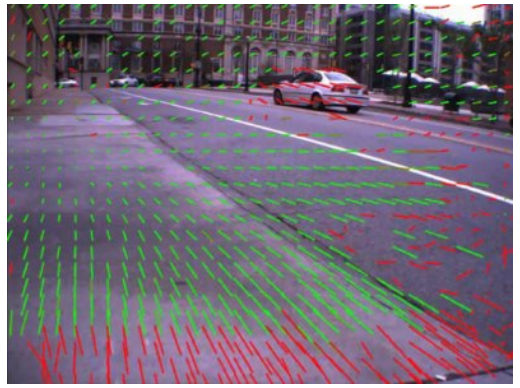
- Classification of camera operations in video shots
  - Pan, tilt, track/traveling

Doings:

- Literature review (papers, Github, …)
- Implementation of own solution (e.g. optical flow, DL, …)
- Evaluation and comparison to state-of-the-art approaches
- Readable and documented source-code
- Usable software package
- Final report + presentation







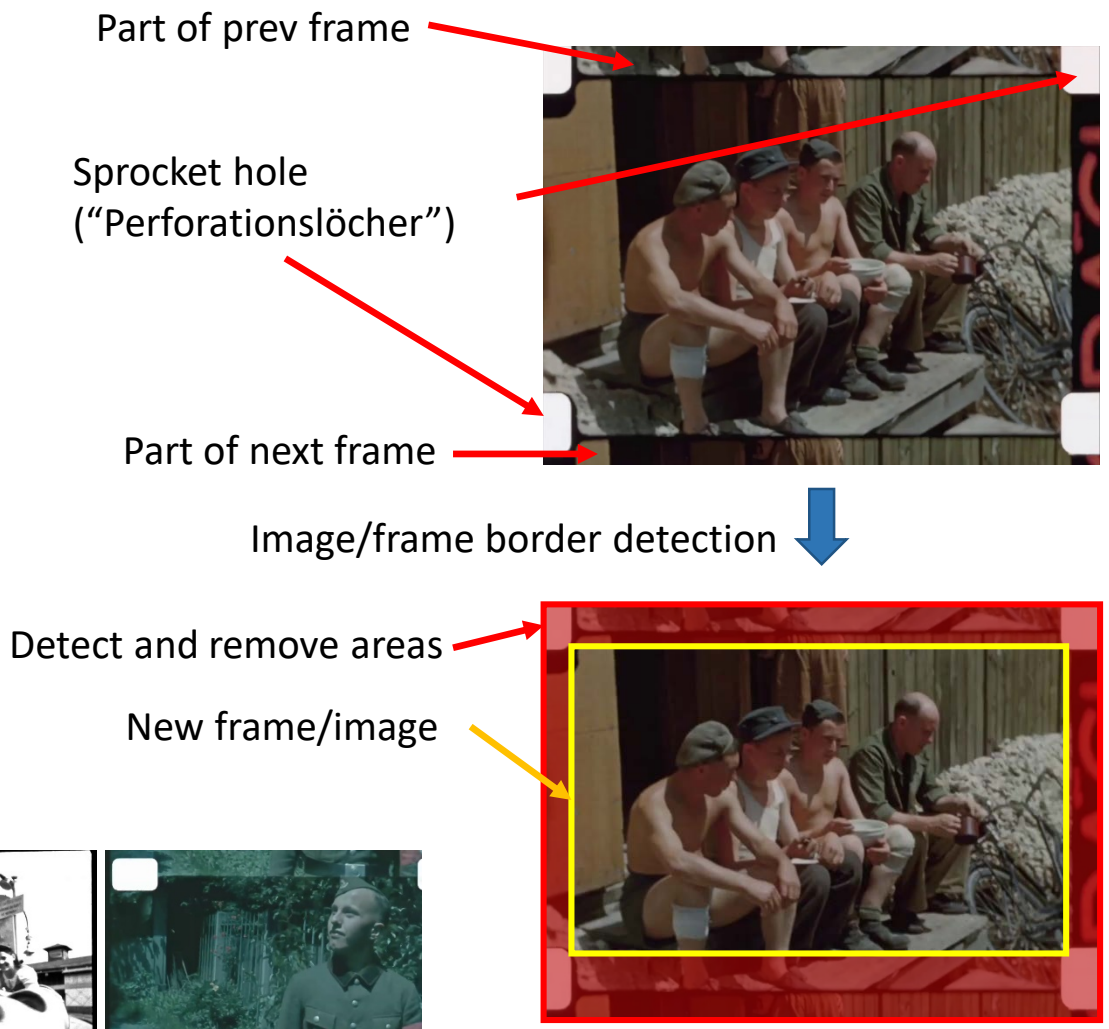
Project 04: Frame Border Detection in historical videos

Objective:

- Find frame borders in digitized historical videos

Doings:

- Literature review (papers, Github, …)
- Implementation of own solution
- Readable and documented source-code
- Usable software package
- Final report + presentation



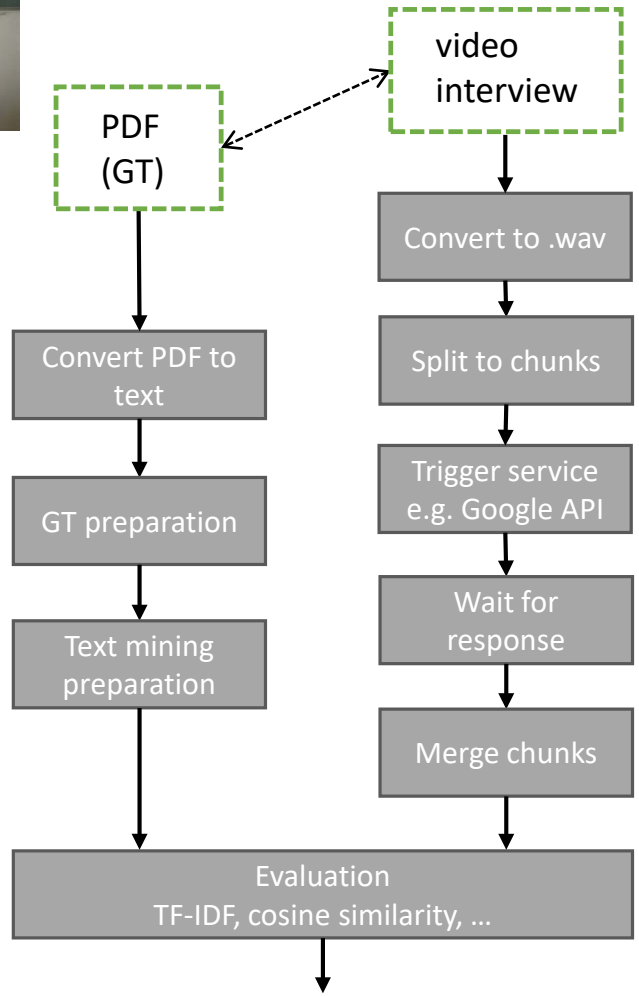
Project 05: Evaluation of Speech-to-text APIs

Objective:

- Transcription of audio interviews

Czech, Polish, Slovenian, Serbia, English, Russian, Dutch, French, Spanish, Hungarian, Ukrainian, Greek, Hebrew, Italian

- Doings:
  - Search Speech-to-text APIs (e.g. AssemblyAI, Google, AWS, CMUSphinx, Microsoft, …)
  - Qualitative and quantitative comparison
  - Optimization (text-mining, fine-tuning, …)
  - Readable and documented source-code
  - Usable software
  - Final report + presentation



[0.01.16]

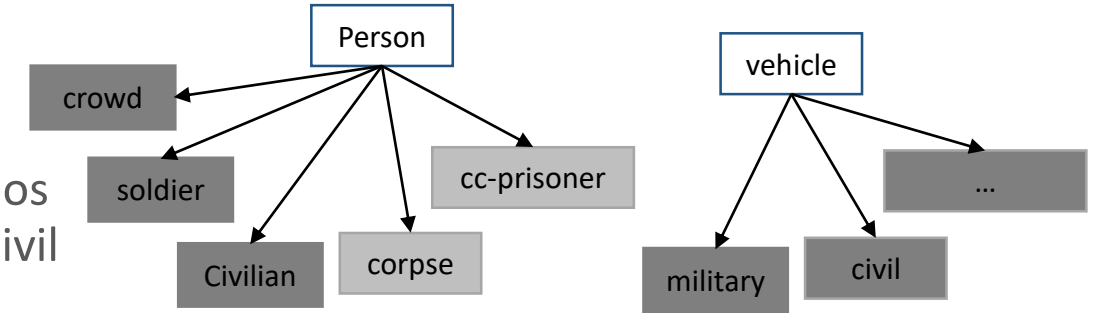
DF- Buongiorno, ingegner Alberto Todros, vuole gentilmente raccontarci la storia della sua vita?

AT- Volentieri, molto volentieri. -- Posso incominciare [si schiarisce la gola]. - Per/ per mettere a fuoco alcuni elementi che poi avranno grande importanza sui motivi della deportazione è necessario che io incominci molto lontano nel tempo. Ehm, mio padre, ebreo di Torino, durante la prima guerra mondiale era in Marina su una nave di stazza[1] a

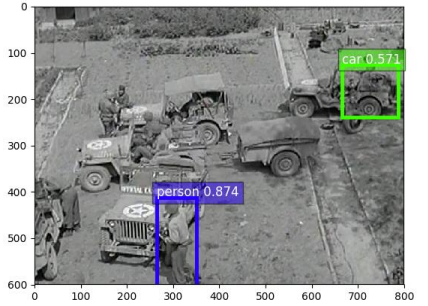
Project 06: Evaluation of Object Detection algorithms in historical videos

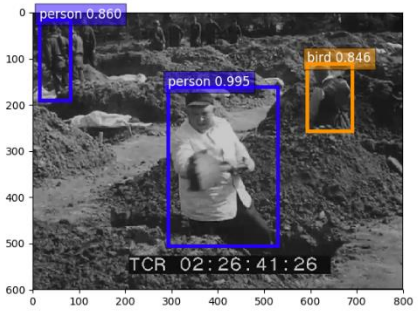
Objective:

- Detection and classification of objects in historical videos
- Class categories: soldier, civil, crowd, military vehicle, civil vehicle



- Doings:
  - Literature review (Papers, Github, …)
  - Comparison of state-of-the-art object detectors (e.g.: YoloV3, Faster-RCNN, RCNN, SSD, DarkNet, ...)
  - Generate a training, validation and test set (e.g. 500 samples per class)
  - Fine-tuning of selected algorithm with new class categories
  - Implement own solution
  - Evaluation of results
  - Readable and documented source-code
  - Usable software package
  - Final report + presentation





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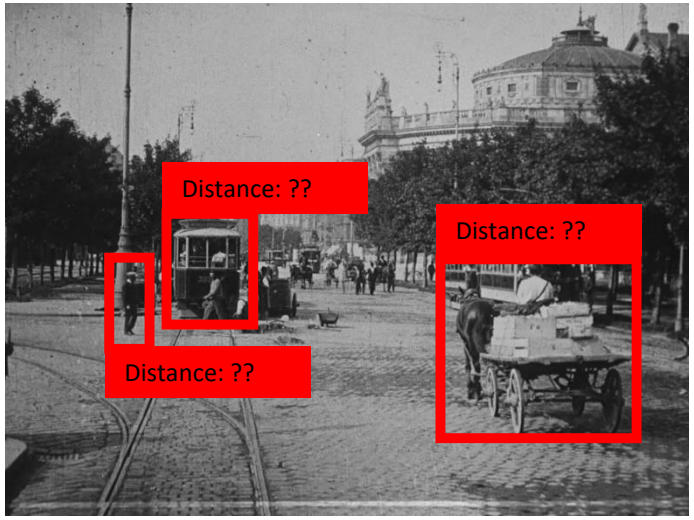
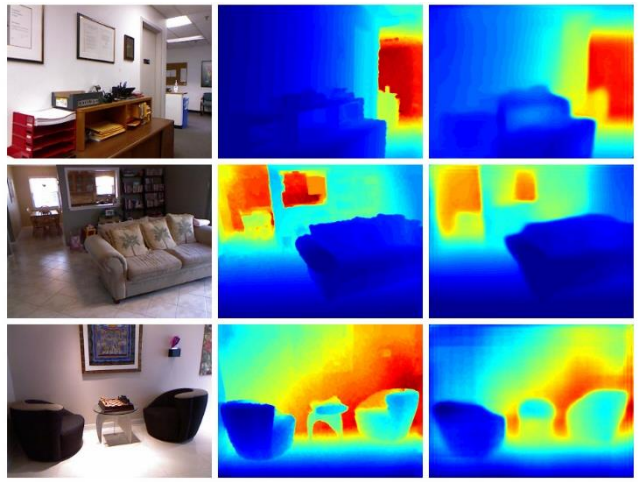
Project 07: Object-Camera distance estimation in videos

Objective:

- Estimation of distance between objects and camera in historical videos

- Doings:
  - Literature review (Papers, Github, …)
  - Evaluation of state-of-the-art Depth-Estimation algorithms using DNN
  - Implement own solution
  - Qualitative and Quantitative evaluation
  - Readable and documented source-code
  - Usable software package
  - Final report + presentation





Project 08: CV algos: mobile versus server based

Objective:

- Which CV algos are currently possible to be run on a mobile?

- Doings:
  - Literature review (Papers, Github, …)
  - Evaluation of selected algorithms and libs applicable
  - Implement own solution
  - Qualitative and Quantitative evaluation
  - Readable and documented source-code
  - Overview software packages and written comparision
  - Final report + presentation

- Student/Interessent: Dominik Scholz

Project 09: Mobile face recognition / Biometric Match

Objective:

- Spezifikation und Implementierung eines mobilen Tools (Apps) zur biometrischen Identifikation eines Gesichtsbildes auf Basis einer Ähnlichkeitsanalyse zweier Bilder; Vergleich eines life Bildes mit der Aufnahme zb eines Passfotos.

- Doings:
  - Literature review (Papers, Github, …)
  - Implement own solution
  - Qualitative and Quantitative evaluation
  - Readable and documented source-code
  - Final report + presentation

➢Student/Interessent:

Project 10: Mobile: combining face recognition & finger print

Objective:

- Spezifikation und Implementierung eines mobilen Tools (Apps) zur biometrischen Identifikation, wobei ein Gesichtsbild und ein Fingerprint aufgenommen und verglichen werden.

- Doings:
  - Literature review (Papers, Github, …)
  - Implement own solution
  - Qualitative and Quantitative evaluation
  - Readable and documented source-code
  - Final report + presentation

- Student/Interessent:

Project 11: Avatar”steuerung” mittels Behavior detection

Objective:

- Demonstrator im Rahmen des WC-Buddy Projektes (https://cvl.tuwien.ac.at/project/wcbuddy/) .

- Doings:
  - Auswahl einer Avator Software
  - Erkennen bestimmter Bewegungsmuster wie Sitzen und Stehen aus Tiefendaten (Algos teilweise vorhanden)
  - Steuerung des Avatars durch erkannte Bewegungsmuster

- Ansprechpartnerin: Jenny Lumetzberger
- Student/Interessent:

Project 12: **Edge Analyse mit Hanwha Wisenet sowie Axis (mit ARTPEC 6/7 Chipsatz) Kameras**

Objective:

- Nutzung des **Hanwha Wisenet** bzw. Axis SDK zur Untersuchung der Möglichkeit, ob moderne Tracking by Detection Systeme für div. Anwendungen wie Perimetersicherung, Personenzählung oder Gesichtsdetektion und Erkennung ausreichend performen.

- Doings:
  - Performance u. Framework Evaluierung
  - Funktionsmuster in Form einer App für Hanwha Wisenet Kamera zur Klassifizierung u. Erkennung von zumindest 2 Klassen (z. B. Personen, Autos)

➢Student/Interessent:

Project 13: **Deep Learning Klassifikationsservice auf Basis von OpenVINO**

Objective:

- Nutzung des OpenVINO Frameworks zur Untersuchung der von Intel zur Verfügung gestellten vortrainierten Modelle auf verschiedenen Movidius HW Typen. Dabei ist es interessant wie stark die VPUs sowie Prozessoren belastet werden können sowie die Performance verschiedener trainierter Modelle zur:

  - Personen/Fahrzeugerkennung
  - Gesichtsdetektion
  - Gesichtserkennung
  - Gender/Age Klassifizierung von Gesichtern

- Generell wäre die Generierung eines "generischen" Klassifizierungsservice für zumindest Personen, Fahrzeuge, Gesichter interessant der über binäre Protokolle (ZMQ/Protobuf) Daten empfangen und Klassifizierungen retour liefern kann.

- Doings:
  - Performance und Framework Evaluierung
  - Evaluierung verschiedener vortrainierter Modelle
  - Evaluierung der Trainingsmöglichkeiten
  - Evaluierung YOLO v3 für OpenVINO
  - Funktionsmuster / Prototyp zur Klassifizierung von zumindest 2 Klassen mittels OpenVINO Service (Personen, Fahrzeuge))

- Student/Interessent: