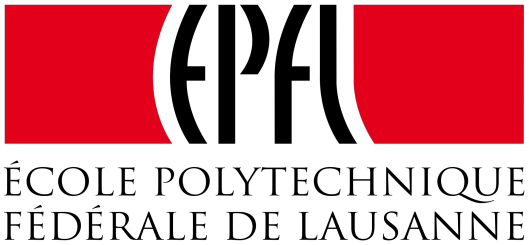


User Privacy Behavior Change in Instagram

Romain Choukroun

Supervisor: Prof. Karl Aberer

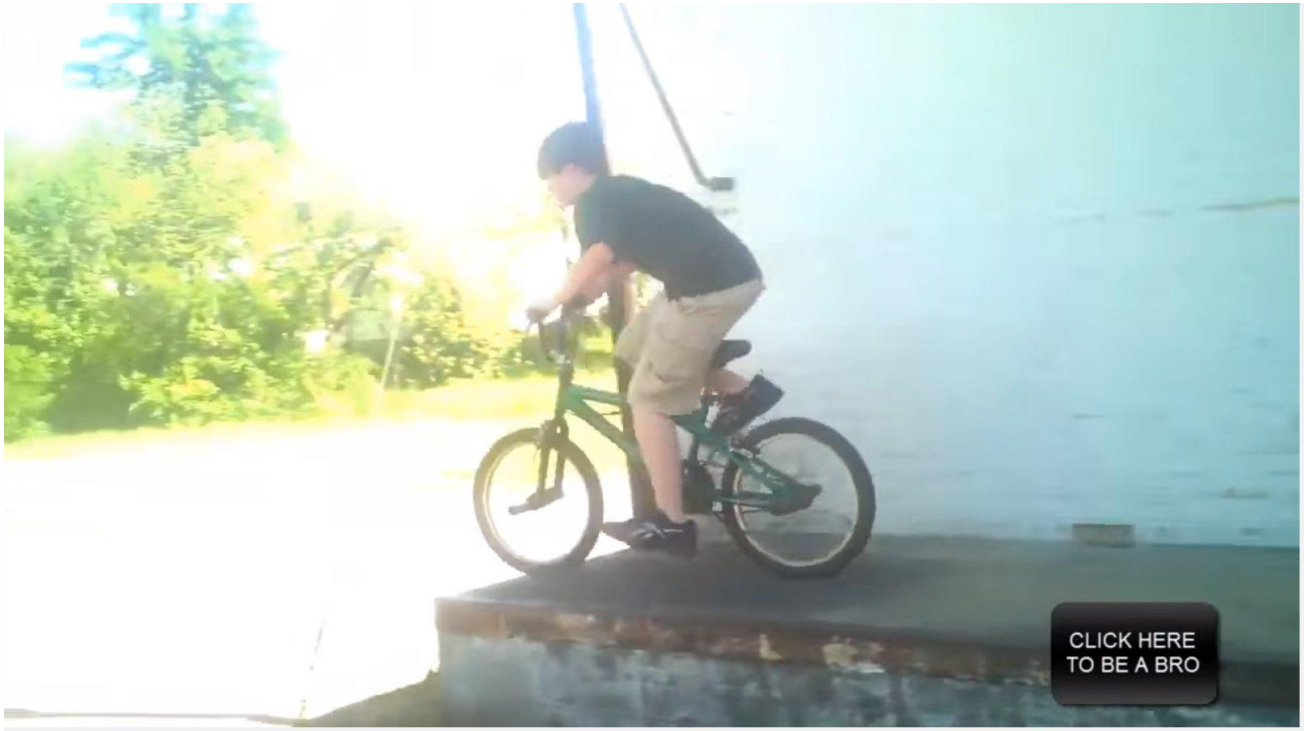
Supervisor: Hamza Harkous

Distributed Information Systems Laboratory

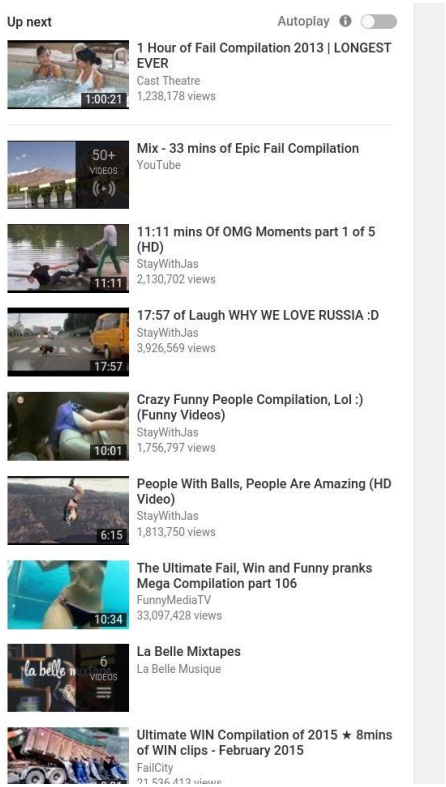
Outline

- Motivations
- Analyzing an input
- Demo
- Future work
- Conclusion

Getting lost on Youtube



33 mins of Epic Fail Compilation



- Each decision you make influences the next set of choices
- Does that apply to privacy ?

2 Steps

- Collecting instagram posts and analyze them

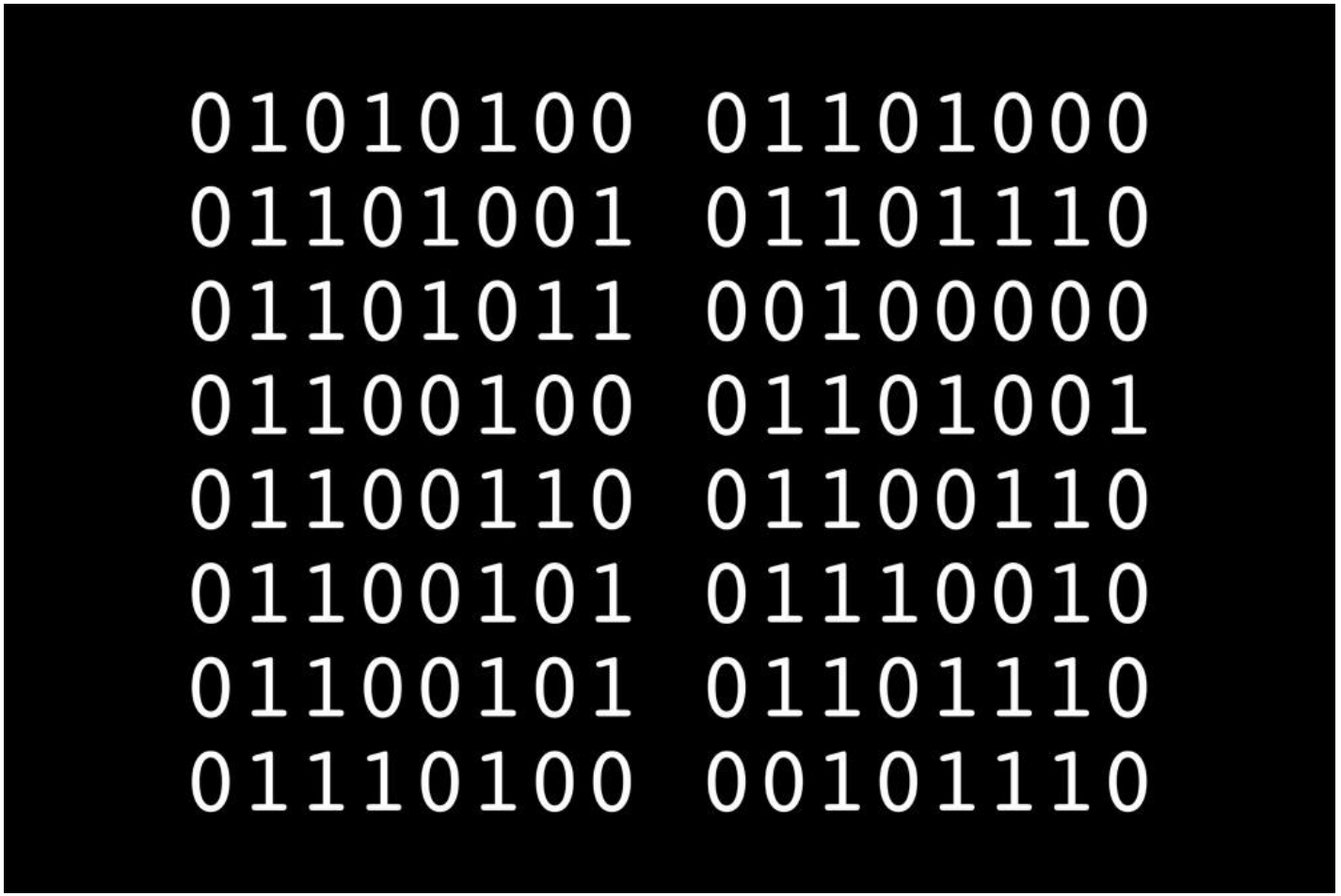
- Build a tool that understands the photo content

What do we see as humans

- From the picture: Computers, happy people, Hackathon banners, food.
- From the tags: Hackathon, development, Netherlands,
  coolblue (with an orange logo)

What computers see

What computers see… Obviously



Understanding vs Recognizing

- Understanding: probably the start of a hackathon organized by coolblue
- Recognizing: computers, human beings of variant ages, tables, chairs

Analysis

- OpenCV (Open-Source Computer Vision)
- Machine learning models
  - Caffe
  - OpenBiometrics
  - Haar Cascade files through OpenCV
- Javascript

Classifiers

- Scenes and Objects
- Age and Gender
- Face Detection
- Nudity Detection
- Emotions Detection

Scenes and Objects

- Caffe Model Zoo
  - AlexNet
  - Hybrid-CNN MIT
  - BVLC GoogleNet
- Google
  - TensorFlow

Model Name	Top-1 Accuracy	Top-5 Accuracy
AlexNet	0.567	0.7956
GoogleNet	0.687	0.8907
Hybrid-CNN	0.50	0.811545
TensorFlow	0.827545	0.965

Age and Gender

- Caffe Model Zoo
  - AgeGenderDeepLearning
- OpenBiometrics

Age and Gender

- Caffe Model Zoo
  - AgeGenderDeepLearning
- OpenBiometrics

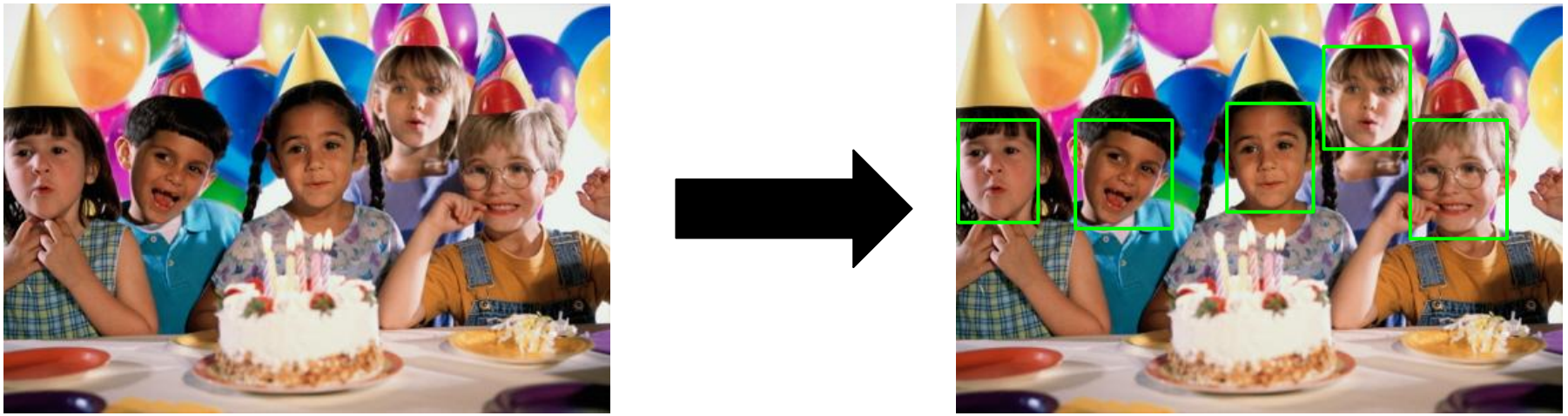
	Age	Gender
AgeGenderDeepLearning	[80; 85]	F
OpenBiometrics	[78; 82]	F

Face Detection

- OpenCV
  - Using Haar Cascades trained for Face Detection

Face Detection

- OpenCV
  - Using Haar Cascades trained for Face Detection



Nudity Detection

- Pija library
  - Uses OpenCV
  - Skin Pixel Detection

Nudity Detection

- Pija library
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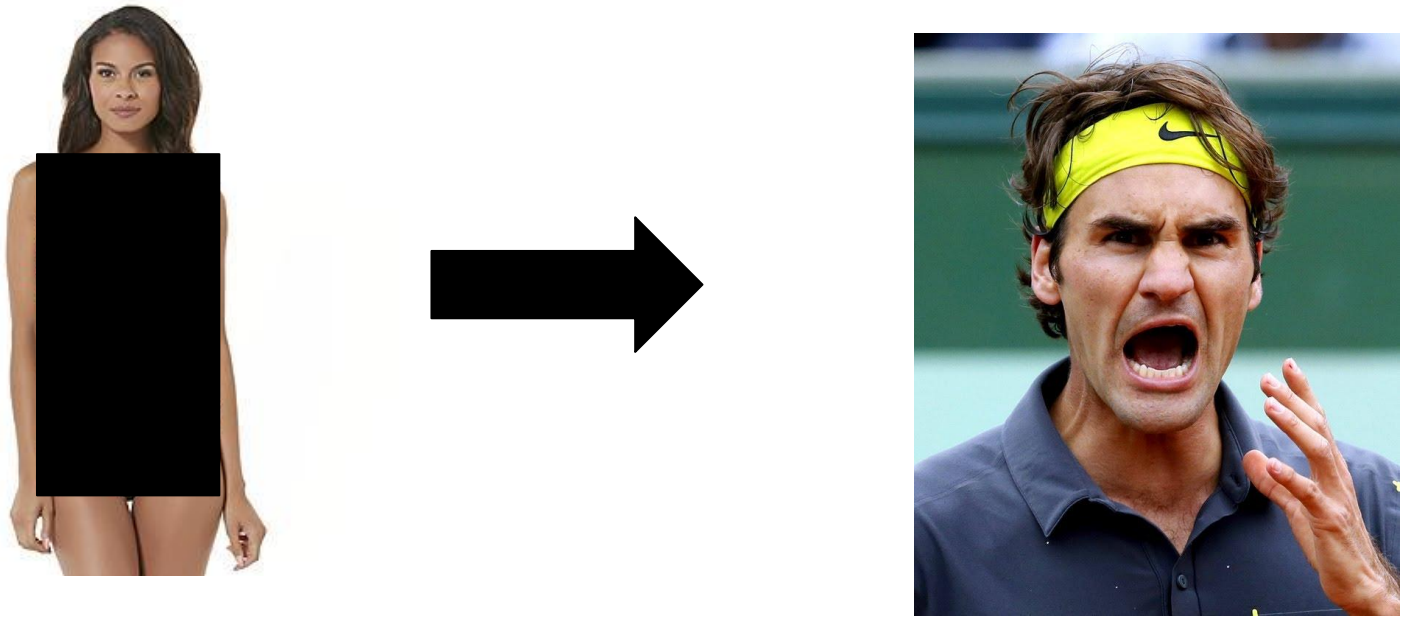
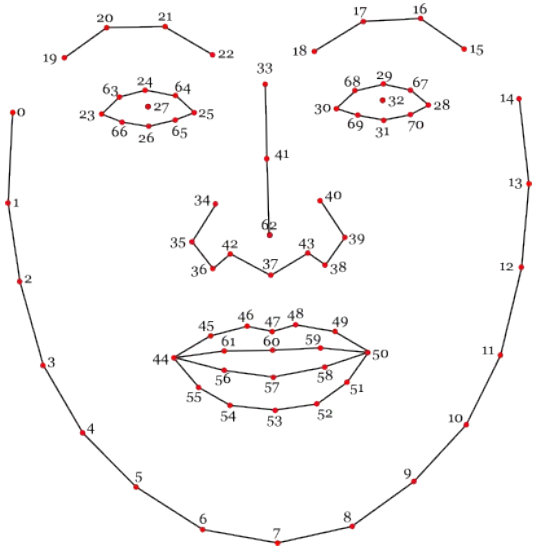


Nudity Detection

- Pija library
  - Uses OpenCV
  - Skin Pixel Detection

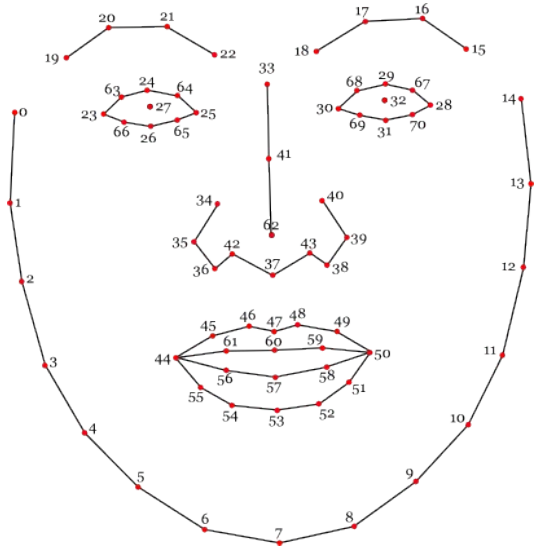
Emotions Detection

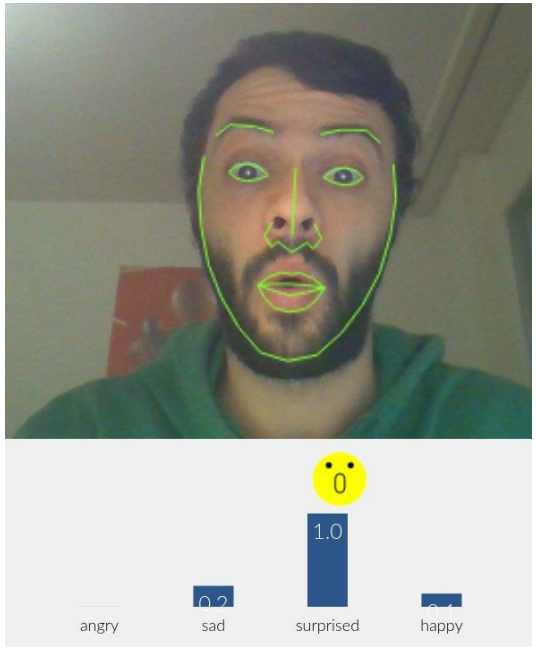
- Clmtrackr Javascript Library



Emotions Detection

- Clmtrackr Javascript Library



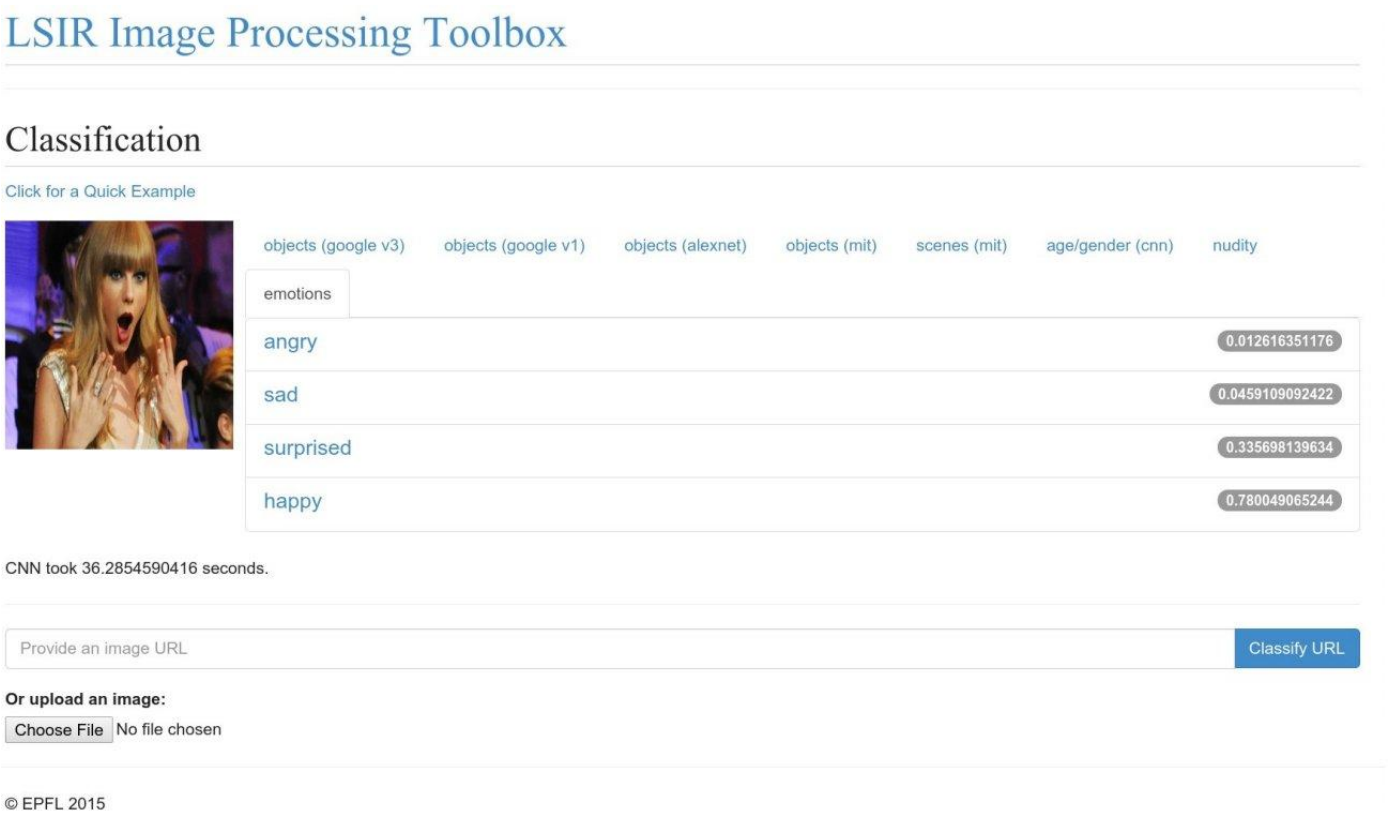


Challenges

- Setup (Thank you Hamza)
  - Guide for Ubuntu on Github
  - Docker ? Anyone ?
- Putting all the blocks together
  - 9 different models
  - 3 different frameworks
  - 4 different languages

Demo time !

Web Demo



http://privyseal.epfl.ch:5000/ through EPFL VPN

What's next ?

- Start using the tool
- Find other classifiers
  - Activities in training on a cluster
  - Optical Character Recognition
- Performance issues
  - 1 second analysis
- Change models
  - Tensorflow

github.com/LSIR/instagram-behavior

Conclusion

- Classification of Instagram pictures
  - Scenes and Objects
  - Age and Gender
  - Face Detection
  - Nudity Detection
  - Emotions Detection
- Had a blast
- Learnt a lot
- Thank you !