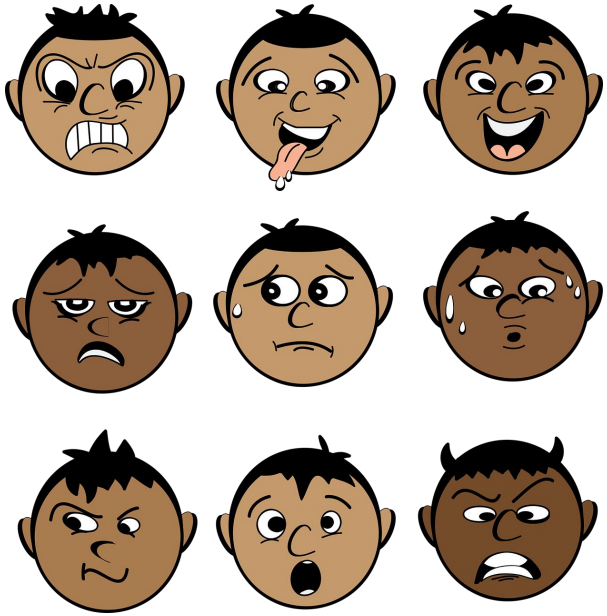

Facial emotion recognition in real-time and static images

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Why ?

Inevitably feelings play an important role not only in our relations with other people but also in the way we use computers

As emotional state of a person may influence concentration, task solving and decision making skills, affective computing vision is to make systems able to recognize and influence human emotions in order to enhance productivity and effectiveness of working with computers.

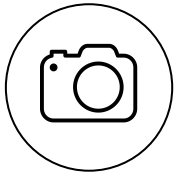
{ 0=neutral, 1=anger, 2=contempt, 3=disgust, 4=fear, 5=happy, 6=sadness, 7=surprise }

MATERIALS AND DATASETS

- Cohn-Kanade Database (CK)
- Extended Cohn-Kanade Database (CK+)
- Python
- OpenCV
- Dlib library
- CMake
- Boost-Python
- FACS
- HAAR
- Support vector machine

Where?

Static images



Real time

How ?

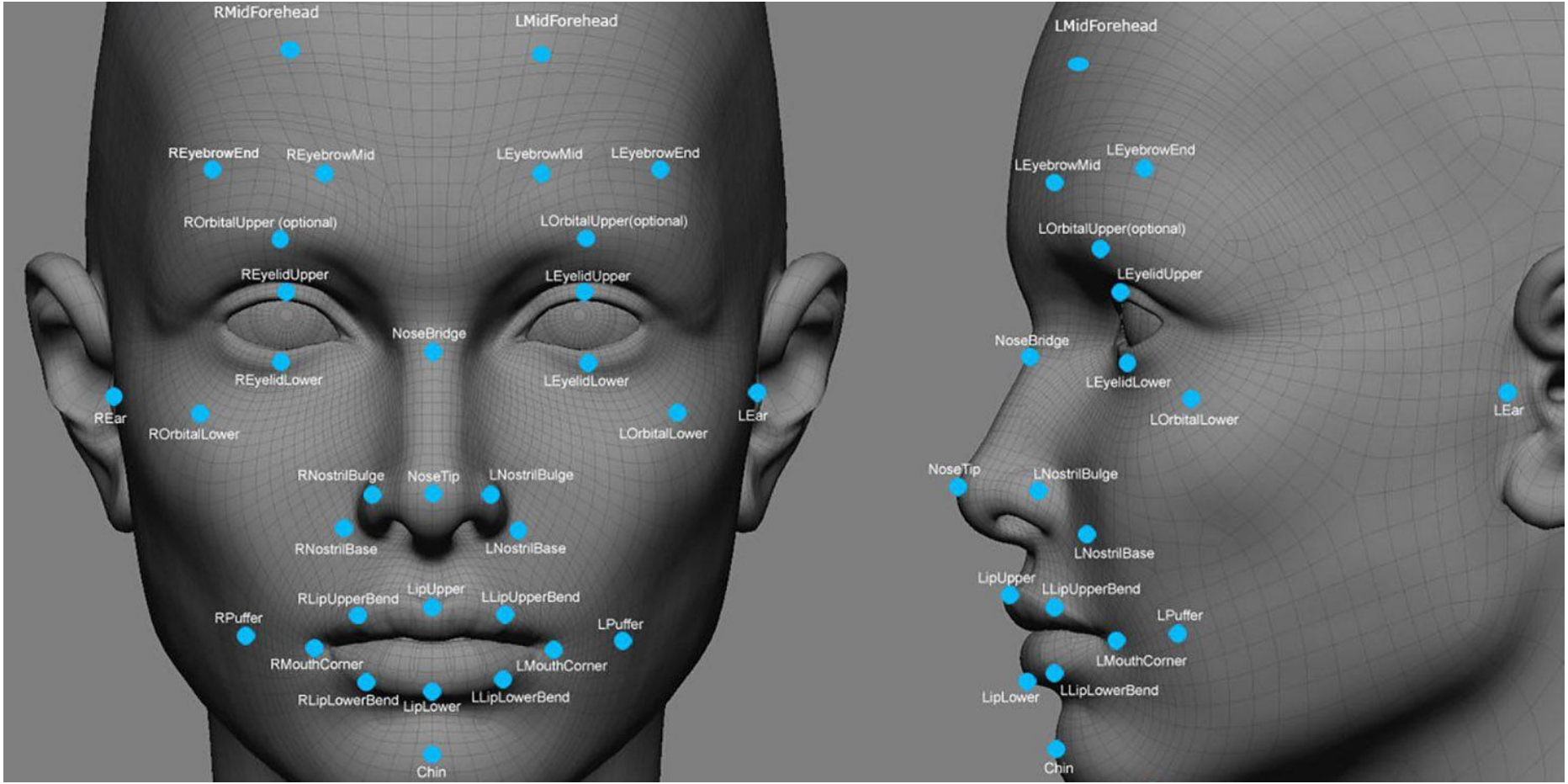
Data organization

Face detection

Feature extraction

Training & classification

Facial Landmarks



Real time

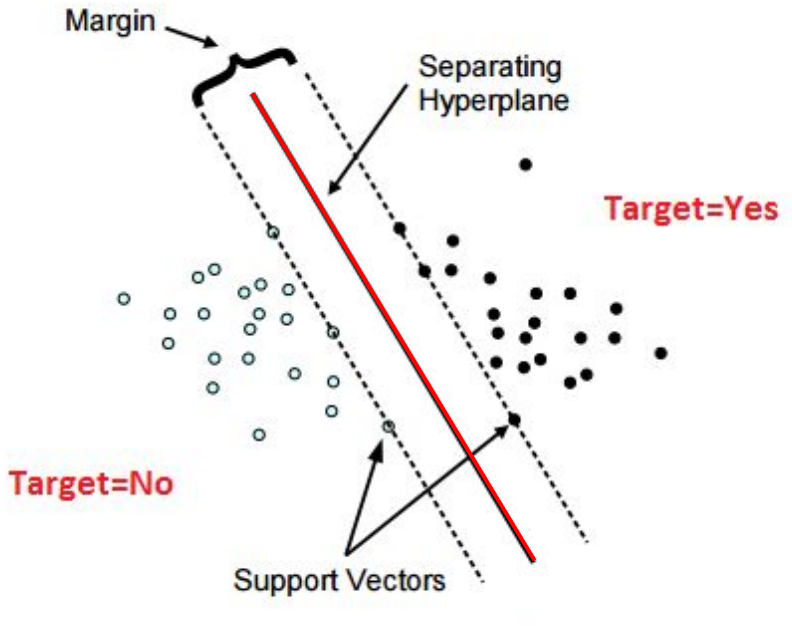
Data organization

Face detection &
Landmark detection

Feature extraction

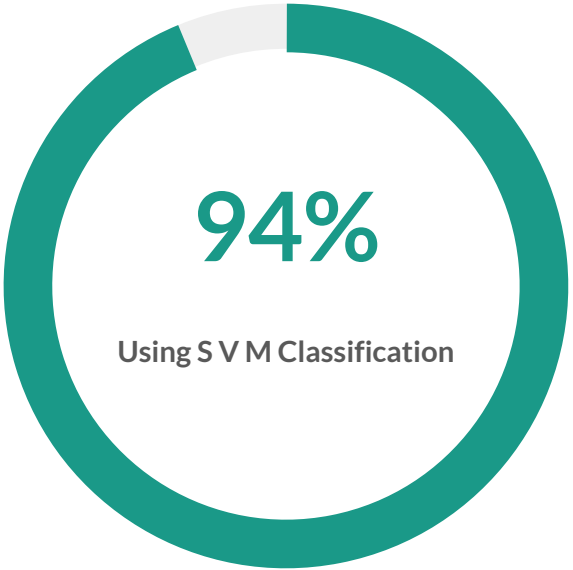
Training and classification

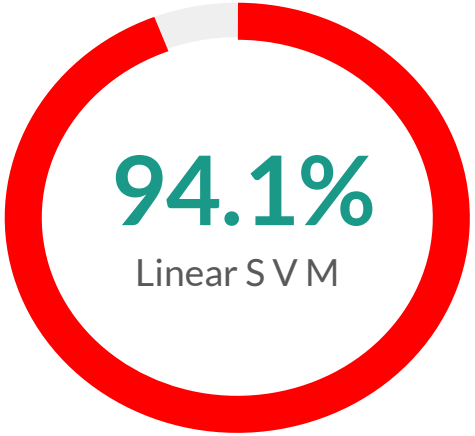
Support Vector Machine

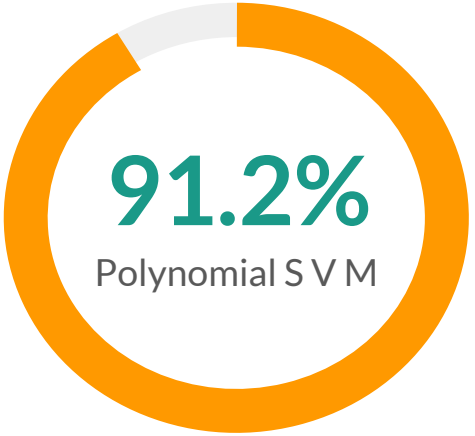


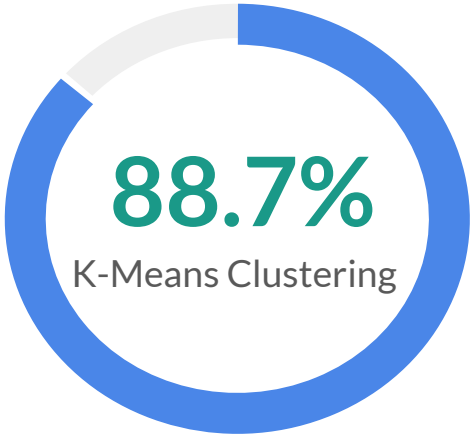
PERFORMANCE EVALUATION

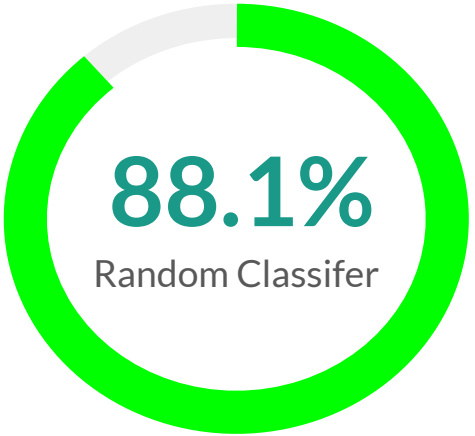
Accuracy rate




94.1%
Linear S V M


91.2%
Polynomial S V M


88.7%
K-Means Clustering


88.1%
Random Classifer

Emotions	Happy	Sad	Fear	Angry	Contempt	Disgust	Surprise	Neutral	Accuracy
Happy	95	0	0	3	1	0	0	1	95%
Sad	1	85	2	0	3	0	1	0	92.3%
Fear	2	2	82	0	0	4	0	0	91%
Angry	2	1	3	78	0	3	0	0	89.6%
Contempt	0	2	1	3	64	0	3	0	87.7%
Disgust	1	3	2	0	0	84	0	1	92.3%
Surprise	2	0	2	0	2	1	91	0	92.9%
Neutral	0	2	1	1	0	0	1	81	91.2%
Overall Accuracy = (660/717 *100%) = 92.1%									

Applications

- Software engineering
- Education and e-education
- Emotional stereotypes of learners
- Enhanced websites customization
- Video Games

CONCLUSION

Thank You