

# A Software Framework for PCA-based Face Recognition

Peng Peng

# Outline

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- Research Progress

# Motivation

- In the age of Big Data, traditional data processing methods are inadequate when facing huge scale of data.
- Machine Learning potentially offers a desirable solution, but when the size of datasets becomes large, executing machine learning algorithms in reasonable amount of time is still challenging.
- Principle Component Analysis (PCA), a data dimensionality reduction approach.
- Focus on Face Recognition.

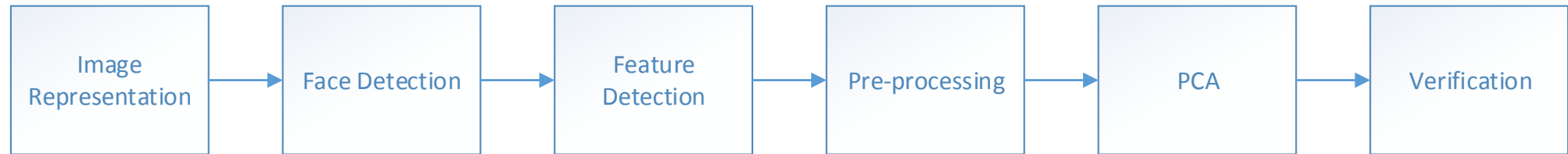
# Problems

- PCA is one of the most effective approaches for Face Recognition.
- Implementing PCA is always time-consuming, especially when adapting to different types of data, or combining with pre-processing steps, and result generation steps.
- Most effort paid on implementation is unnecessary, since PCA is a mature technique.

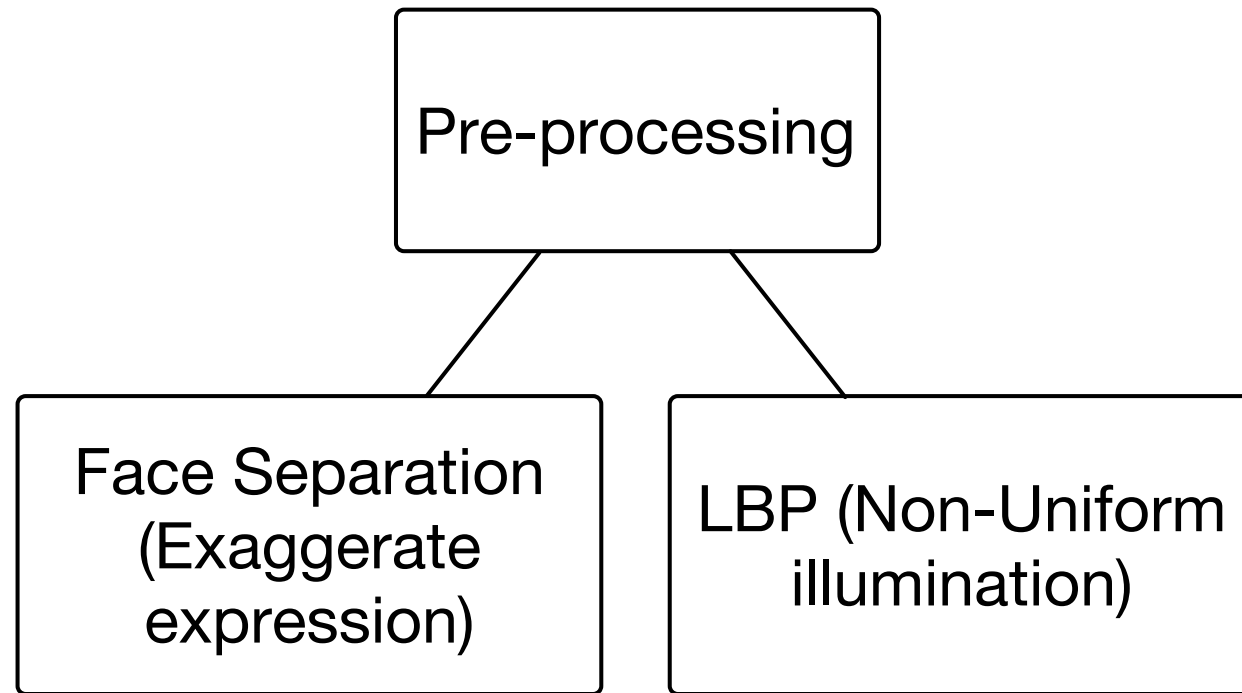
# Goal

- To design and implement a software framework for PCA-based face recognition
- Contributions
  - A Meta-model which includes the entire face recognition process with PCA and multiple variations in each phases used for fitting different situations
  - A framework design at higher level
  - Implementation of the framework
  - A support tool for facial recognition with PCA

# Approach: Face Recognition Process



# Approach: Supporting Variations (e.g. Pre-processing)



# Research Progress

- Design and implementation of the framework (done)
- Compare our meta-model with previous work (in progress)
- Case studies (in progress)
  - Data-type: linear vs. non-linear
  - Illumination
  - Expression



Thanks