ISSN 2277-3061

**Eigen Faces and Principle Component Analysis for Face Recognition**

**Systems: A Comparative Study**

Abdelfatah Aref Tamimi1, Omaima N. A. AL-Allaf2, Mohammad A. Alia3 1 Associate Professor, Dept. of CS, Faculty of Sciences & IT, Al-Zaytoonah University of Jordan,

Amman, Jordan, email: drtamimi@zuj.edu.jo

1. Assistant Professor, Dept. of Basic Sciences, Faculty of Sciences & IT, Al-Zaytoonah University of Jordan,

Amman, Jordan, email:omaimaalallaf@zuj.edu.jo

1. Associate Professor, Dept. of CIS, Faculty of Sciences & IT, Al-Zaytoonah University of Jordan, Amman, Jordan, email: dr.m.alia@ zuj.edu.jo

# ABSTRACT

Face recognition has been largely used in biometric field as a security measure at air ports, passport verification, criminals' list verification, visa processing, and so on. Various literature studies suggested different approaches for face recognition systems and most of these studies have limitations with low performance rates. Eigenfaces and principle component analysis (PCA) can be considered as most important face recognition approaches in the literature. There is a need to develop algorithms and approaches that overcome these disadvantages and improve performance of face recognition systems. At the same time, there is a lack of literature studies which are related to face recognition systems based on EigenFaces and PCA. Therefore, this work includes a comparative study of literature researches related to Eigenfaces and PCA for face recognition systems. The main steps, strengths and limitations of each study will be discussed. Many recommendations were suggested in this study.

**Indexing terms/Keywords**

Face recognition, Eigenfaces, Eigenvectors, Eigenvalues, Principle Component Analysis (PCA).

**Academic Discipline And Sub-Disciplines**

Artificial Intelligence, Artificial Neural Networks, Image Processing.

# SUBJECT CLASSIFICATION

Computer Science.

# TYPE (METHOD/APPROACH)

Literary Analysis; Survey/Interview