



PROJECT REPORT
COMPARISON BETWEEN DEEP NEURAL NETWORK
AND PRINCIPAL COMPONENT ANALYSIS
ALGORITHM IN FACE RECOGNITION

NADYA ANGELLA
18.K1.0008

Faculty of Computer Science
Soegijapranata Catholic University
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HALAMAN PENGESAHAN



Judul Tugas Akhir: : Comparison between Deep Neural Network and Principal Component Analysis Algorithm in Face Recognition

Diajukan oleh : Nadya Angella

NIM : 18.K1.0008

Tanggal disetujui : 06 Januari 2022

Telah setuju oleh

Pembimbing : R. Setiawan Aji Nugroho S.T., MCompIT., Ph.D

Penguji 1 : R. Setiawan Aji Nugroho S.T., MCompIT., Ph.D

Penguji 2 : Hironimus Leong S.Kom., M.Kom.

Penguji 3 : Yonathan Purbo Santosa S.Kom., M.Sc

Penguji 4 : Rosita Herawati S.T., M.I.T.

Penguji 5 : Yulianto Tejo Putranto S.T., M.T.

Penguji 6 : Y.b. Dwi Setianto S.T., M.Cs.

Ketua Program Studi : Rosita Herawati S.T., M.I.T.

Dekan : Dr. Bernardinus Harnadi S.T., M.T.

Halaman ini merupakan halaman yang sah dan dapat diverifikasi melalui alamat di bawah ini.

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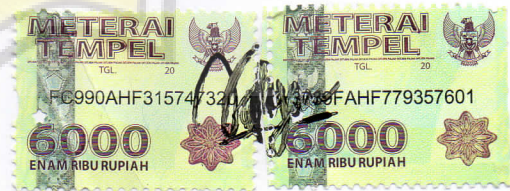
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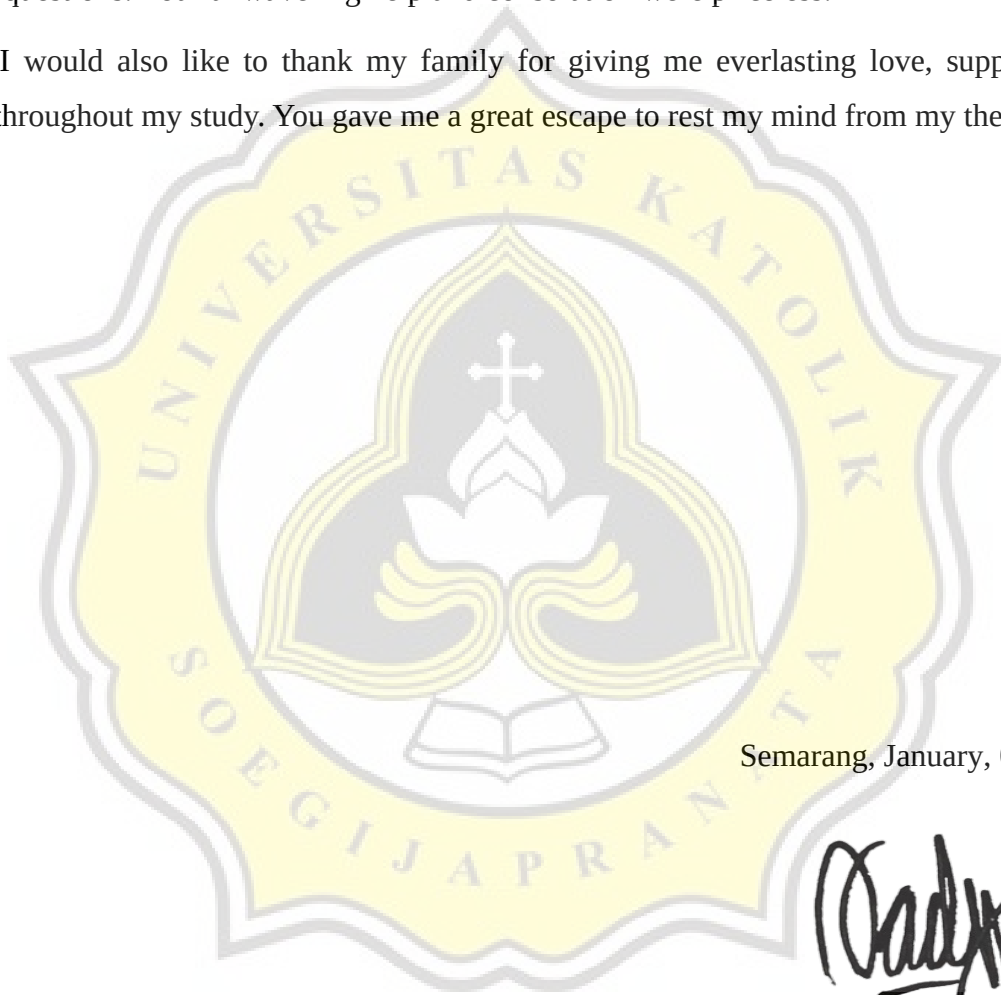
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Semarang, January, 06, 2022

A handwritten signature in black ink, appearing to read 'Nadya', with a large loop at the end.

NADYA ANGELLA

18.K1.0008

ABSTRACT

Face recognition is one technology that is commonly used now. Even our mobile phones use this technology as a security lock. Therefore, various algorithms continue to be developed to obtain maximum results with minimum costs. One of them is the Deep Neural Network or DNN algorithm. This DNN algorithm is part of the machine learning field. While DNN requires a large dataset to train the algorithm, another algorithm called the Principal Component Analysis (PCA) algorithm works good in a smaller dataset. These algorithms are compared to know which algorithm has the better result in given circumstances. Later the accuracy, speed, and optimality of the algorithms are analyzed. This project also examines the most preferable and optimum algorithms within the cases.

By comparing these algorithms, we could know which algorithm is preferable based on your needs. First, fetch the Olivetti faces dataset with the help of the Sklearn dataset library and split the dataset into two parts; training set and testing set. Then, the DNN algorithm is trained using the training set. After that, the model trained is tested with the testing set. The same step is also done for the PCA algorithm. After the result is obtained, we can conclude which algorithm is better within the given condition.

After the experiment is done, we can assume that the two algorithms have a slight difference in terms of accuracy. Also, the time used for running the PCA implementation code is slightly longer than DNN. However, that does not mean that the PCA algorithm is not great. If the dataset to be used is limited, PCA is going to be a good choice.

Keyword: Deep Neural Network, Principal Component Analysis, Face Recognition

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