

DECLARATION

I hereby want to declare that the thesis entitled “**GWO in face recognition and comparison with other metaheuristic algorithms**” which is being submitted to the **Delhi Technological University**, in partial fulfillment of the requirements for the award of degree in **Master of Technology in Software Engineering** is an authentic work carried out by me. The material contained in this thesis has not been submitted to any institution or university for the award of any degree.

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CERTIFICATE



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This is to certify that the thesis entitled “**GWO in face recognition and comparison with other metaheuristic algorithms**” done by **Gopal Singh Rawat** (2K14/SWE/05) for the partial fulfillment of the requirements for the award of degree of **Master of Technology Degree in Software Engineering** from the **Department of Computer Engineering**, Delhi Technological University, New Delhi is an authentic work carried out by him under my guidance.

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ABSTRACT

Face recognition is the one of most attractive in the field of information access. People are main subject of media such as images and video. Face recognition can be used as a authentication techniques as well as verification techniques while using the data most vulnerable to attacks and information stealing. For video calling and other communication system face recognition provides a better scheme of coding for authentication.

Face recognition is the process of identifying a human face from digital media that may be an image or a video stream etc. it has its own importance in research area in computer vision. Its various applications encompass the most real world problem. It can also be solved as a optimization problem. Most traditional approach may fail while we are talking about the real world optimization problem in terms of efficiency and accuracy so computational algorithms comes into game. Computation intelligence includes evolutionary computation, fuzzy logic, artificial neural networks and swarm intelligence.

Face recognition is combination of features extraction and recognition process. In former images are smoothen with the use of Gabor kernel and features are extracted with the use of PCA. While in later part, we use evolutionary algorithm to find optimal features and another evolutionary algorithm to recognize the image given. We tried different algorithm to optimize the solution in both of the part of facial recognition.

Metaheuristic algorithms such as Biogeographical Based Optimization(BBO), Ant Colony Optimization(ACO), Hybrid ACO/PSO, Particle Swarm Optimization(PSO) , Extended BBO and traditional approaches like Principal Component Analysis(PCA) have been used in the field of face recognition. These approaches force the user to be confused to choose the best method for recognition. We have used Grey Wolf Optimizer algorithm and compare to previously used approaches in order to help the user to choose the appropriate.

We have used Cohn-Kanade database and Olivetti research Laboratory (ORL) face database for analysis. We found some to be good in one parameter of analysis and another one in different parameter but GWO satisfies both the parameters i.e. recognition time and accuracy.