

Final Project Proposal:

A Hybridization of Neural Networks and Evolutionary Algorithms for Face Detection

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Computer Science 3445: Nature Inspired Computation

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Professor Majercik

1. Description of Project

1. *Description:*

We are planning to implement a Neuroevolutionary approach to detect faces in photographs. The algorithm will take in a photograph (grayscale) as content for the input nodes for training and testing. The corresponding output can be represented as a 1 (face detected) or 0 (face not present). From this point, we will evolve the topologies within the neural network. Each topology represents different ways in which an input node can be connected to an output node. The fitness function will evaluate the input node topology based on the minimization of error from the desired output. More fit parent topologies will be placed into a breeding pool, each fit parent produces one child, and each child has the potential to mutate. After this evolutionary process, the neural network undergoes training once more, and the process repeats itself.

2. *Test Files:*

A combination of our own pictures and pictures off the internet will be used as our test and training files.

3. *Timeline:*

April 17th: Basic architecture, Problem I/O
April 24th: Majority of code finished
May 1st: Finetune code and testing
May 8th: Finish report and turn in project

4. *Group Members:*

David Needell, Sawyer Bowman, Phoebe Bumsted, Ryan Barrett

2. References

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