

## Assignment 3: Connectionist Architectures and Ensemble Techniques: Part 1

We used a fully connected network with  $128 \times 120$  inputs, representing the number of pixels in the picture. Being fully connected, it means that all the nodes of the hidden layer are connected to the input layer one by one, and also to the output layer. We have 3 hidden nodes and 1 output node, representing either male as true (1) and female as false (0). Having 3 hidden nodes would make the network less convoluted and prevent overfitting. We use backpropagation to update the weights in the network so that they cause the actual output to be closer the target output, thereby minimizing the error for each output neuron and the network as a whole. When the input is propagated forward in the network, it passes through the three layers until it reaches the output layer. The output is then compared to the desired output, using a cost function, and an error value is calculated for the neurons in the output layer. The error is then passed back to the first layer, and then repeating this cycle several times will eventually lead to a smaller error, leading to a value that is very close to the target output.