

## **Combining Neural Networks For Skin Detection**

### **Abstract**

Two types of combining strategies were evaluated namely combining skin features and combining skin classifiers. Several combining rules were applied where the outputs of the skin classifiers are combined using binary operators such as the AND and the OR operators, "Voting", "Sum of Weights" and a new neural network. Three chrominance components from the YCbCr colour space that gave the highest correct detection on their single feature MLP were selected as the combining parameters. A major issue in designing a MLP neural network is to determine the optimal number of hidden units given a set of training patterns. Therefore, a "coarse to fine search" method to find the number of neurons in the hidden layer is proposed. The strategy of combining Cb /Cr and Cr features improved the correct detection by 3.01% compared to the best single feature MLP given by Cb-Cr. The strategy of combining the outputs of three skin classifiers using the "Sum of Weights" rule further improved the correct detection by 4.38% compared to the best single feature MLP.