9. CONCLUSION

In this thesis, we have demonstrated a Facial Image Synthesis scheme for Malayalam text with mixed emotions using Neural Network and Digital Image Warping. We developed algorithms for Mapping Malayalam letters into 16 viseme groups, based on visual mouth appearance, and Facial Animation Parameter estimation from known images.

We used a standard two layer Back Propagation Neural Network for generating FAPs for unknown text with emotions. We adapted the BPNN input structure to suit the requirement of mixing text with emotions by encoding Malayalam visemes as a binary number and emotion intensities as real numbers. This helps in driving the neural network to handle the text and emotions in a homogenous way.

We used a standard Digital Image Warping method. We fine tuned the warping parameters to suit facial image synthesis.

We developed an user interface to accept standard bitmap and vector files for images, standard text files for Malayalam text and emotions, and we provide outputs in standard bitmap files for further video editing tools. The software is packaged into a single executable file FIS.EXE, in the enclosed CD, which runs in Windows environment.

The obtained results match well with real world talking faces, better on vector images. For raster images, we observed noticeable visual artifacts near the eye, which is prominent for surprise emotion. We did not consider teeth, which gives slightly non-realistic looks.

Further possibilities include provision for teeth, eye closures and other gestures. Recognition of visemes from speech gives wider commercial possibilities.