Niranjan D. Khambete, A speech training aid for the deaf, M. Tech. Thesis, School of Biomedical Engineering, Indian Institute of Technology Bombay, 1992.

Supervisor(s): Dr. P. C. Pandey & Dr. S. R. Devasahayam

*Abstract* – Prelingual, profoundly deaf children have great difficulty in achieving intelligible speech. The obvious reason is absence of auditory feedback of their own speech. Even after intensive instructions, their speech may remain deficient in prosodic and phonetic characteristics.

This project is aimed at developing a PC based speech training aid for the deaf. The speech training aid displays vocal tract shape and energy variations for the speech of the speaker (the deaf student under speech training, or the teacher). The system has been designed for operation in two modes: real-time display mode and slow motion review mode. An add-on DSP board using signal processor chip TMS30C25, with on-board memory shareable between the processor and PC, was found suitable for implementation of the aid. Area function is extracted using LPC algorithms and image is generated on the DSP board, and display image and data for storage are transferred to PC frame-by-frame. The system can be further improved by displaying a more realistic vocal tract shape and inclusion of pitch.