

Milind S. Gupte, A speech processor and display for speech training of the hearing impaired, M. Tech. Thesis, Department of Electrical Engineering, Indian Institute of Technology Bombay, 1990.

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**Abstract** – Profoundly deaf persons, due to the lack of auditory feedback, generally need to be trained to acquire and produce ‘proper’ prosodic and articulatory features of speech. This project aims at the development of an aid which would provide visual feedback, in the form of vocal tract lateral shape, pitch, and energy, to the deaf persons, for improving their speech.

Linear predictive coding technique was selected for speech analysis. As a first step, a software package in PASCAL was developed for non-real-time analysis and display of the vocal tract area function, pitch contour, and energy on a PC for the purpose of testing and experimentation. This was followed by the development of the hardware and software for the aid.

Real-time analysis of speech is carried out by a digital signal processor TMS-32010 Evaluation Module (EVM) from Texas Instruments and the display function is handled by a PC. An extension card to the EVM and an interface card to the PC were developed for coordinating the acquisition, analysis, and display functions. At present, an assembly language program on TMS-32010 carries out the speech analysis and the PC displays the area function and the intensity at the end of the analysis of a speech segment.

After further improving the display updating functions, the aid should be tested by speech therapists and teachers for the hearing impaired persons. Feedback from them can be used to develop an improved version of the aid.