



INDIAN INSTITUTE OF TECHNOLOGY GUWAHATI
SHORT ABSTRACT OF THESIS

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OBJECTIVE ASSESSMENT OF CLEFT LIP
AND PALATE SPEECH INTELLIGIBILITY
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SHORT ABSTRACT

This thesis aims to derive a set of objective intelligibility measures based on the acoustic analysis of speech for cleft lip and palate (CLP) individuals. CLP is one of the most common congenital disorders of the craniofacial region. The speech of individuals with CLP is primarily distorted due to the articulation error and hypernasality, which significantly reduced the speech intelligibility. Motivated by this observation, a composite measure of sentence-level intelligibility is proposed by combining the information of articulation deficits and hypernasality. Further, the performance of the intelligibility prediction algorithm is improved by incorporating the acoustic information extracted from the speech region around abrupt consonant landmarks. However, the performance of both the above methods is depended on the accurate detection of

specific events, and it is noticed that results are sometimes inconsistent. To overcome these issues,

methods are proposed based on the comparison of posterior sequences to measure the intelligibility.

Two comparison based frameworks using dynamic time warping and matching of self-similarity matrices are

proposed to quantify the intelligibility. Finally, a visual representation based on the spider plot is

proposed for graphing the intelligibility scores. Each polygon of the spider plot represents

intelligibility space of the speaker.

