© INTERNATIONAL JOURNAL FOR RESEARCH PUBLICATION & SEMINAR
ISSN: 2278-6848 | Volume: 06 Issue: 04 | July-September 2015

Investigation into Speech recognition by Machines and Humans

[1]Manju, [2]Abhishek Bhatnagar
1. M.tech student 2. Asstt. Prof. ,IIET (Jind)

ABSTRACT: This paper reviews past work comparing modern speech recognition systems and humans to determine how far recent dramatic advances in technology have progressed towards the goal of human-like performance. Comparisons use six modern speech corpora with vocabularies ranging from 10 to more than 65,000 words and content ranging from read isolated words to spontaneous conversations. Error rates of machines are often more than an order of magnitude greater than those of humans for quiet, wideband, read speech. Machine performance degrades further below that of humans in noise, with channel variability, and for spontaneous speech. Humans can also recognize quiet, clearly spoken nonsense syllables and nonsense sentences with little high-level grammatical information.

Introduction : Dramatic advances have been made in speech recognition technology over the past few years. Despite these advances, commercial recognizers have been successful only in a few constrained application areas. Many researchers believe that recognizers will enjoy widespread use and become commonplace only if their performance approaches that of humans under everyday listening environments. This paper measures how far research has progressed towards this goal. Results from scattered studies which have compared human and machine speech recognition on similar tasks are summarized to determine how much speech recognizers must improve to match human performance. Speech corpora used in these comparisons do not represent everyday listening conditions, but they span a continuum ranging from quiet read isolated words, to noisy read sentences, to spontaneous telephone speech. Results clearly demonstrate that modern speech recognizers still perform much worse than humans, both with wideband speech read in quiet, and with band-limited or noisy spontaneous speech.

Results comparing humans to machines are presented with four important goals. These are to motivate research in directions that will decrease the human–machine performance gap, to promote further human–machine comparisons, to promote further experimental work with human listeners to understand how humans adapt to talker and environ-mental variability, and to encourage a multi-disciplinary dialog between machine recognition and speech perception researchers.