

LIST OF FIGURES

2.1	Architecture of Spoken Dialogue System	16
2.2	A detailed architecture of Spoken Dialogue System	18
2.3	Example of Finite State based System	19
3.1	Voiced Unvoiced and Silence detection using segmentation	33
3.2	A typical signal with ZCR	35
3.3	ZCR with shift and without shift	35
3.4	ZCR of a voiced signal	36
3.5	ZCR of an unvoiced signal	36
3.6	STE of a typical signal	37
3.7	voiced/unvoiced classification	38
3.8	voiced/unvoiced/silence classification	39
3.9	Four state of finite state diagram	44
3.10	Energy plot of a Bodo word “furbow”	44
3.11	Word boundaries identified using Transcriptions.....	45
3.12	Speech file (top panel) and energy of speech file (bottom panel)	46
3.13	Shows the actual word boundaries (green) and candidate word boundaries (red) which were determined using energy.....	46
3.14	Pitch contour of Bodo vowel	47
3.15	Nonlinear Processed Bodo Speech Signal.....	48
3.16	Spectral pitch track and Energy overlaid on Spectrogram.....	48
3.17	Pitch Candidates of a Bodo sentence.....	49
3.18	Voiced –Unvoiced separation of Bodo sentence.....	49
3.19	Fo Contour with Autocorrelation method	50
3.20	Fo contour with capstrum approach	50
3.21	Bodo speech files (Baishaguwa asomia harini furbow).....	51
3.22	Intensity curve of the Bodo speech file	51
5.1	Block diagram of the proposed system	74
5.2	Signal flow in Asterisk	77
5.3	Call flow of the proposed system.....	80
5.4	Sample speech file of TRR_SOUND	86

5.5	Sample speech file of SIL_SOUND	86
5.6	Sample speech file of CPR_SOUND	87
5.7	Sample speech file of REJ_SOUND	87
5.8	a. Signal vs. STE in TRR_SOUND	87
	b. Signal vs. ZCR in TRR_SOUND	88
	c. Signal vs. STE in SIL_SOUND	88
	d. Signal vs. ZCR in SIL_SOUND.....	88
	e. Signal vs. ZCR in CPR_SOUND	88
	f. Signal vs. in CPR_SOUND	89
5.9	REJ_SOUND (a) Signal vs. STE (b) Signal vs. ZCR	90
6.10	Diagrammatic representation of ASR training module	92
6.11	Diagrammatic representation of ASR decoding module	92
6.12	Percentage of Recognition Accuracy	93