Pedagogical Transcription for Multimodal Sitar Performance

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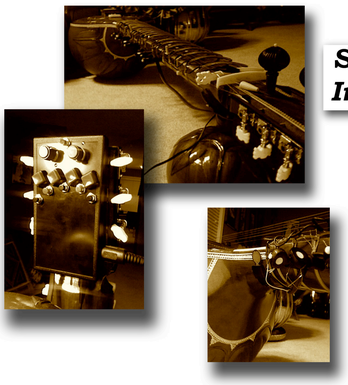
OVERVIEW

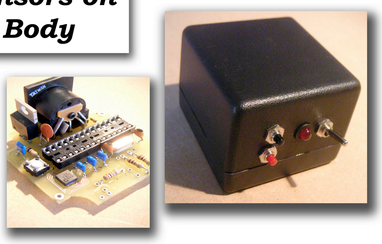
Most automatic music transcription research is concerned with producing sheet music from the audio signal alone. However, the audio data does not include certain performance data which is vital for the preservation of instrument performance techniques and the creation of annotated guidelines for students. We propose the use of modified traditional instruments enhanced with sensors which can obtain such data; as a case study we examine the sitar.

MACHINE PERCEPTION



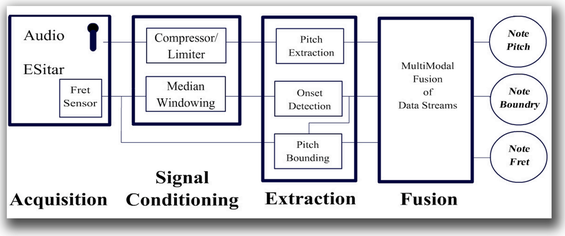
Sensors on Instrument

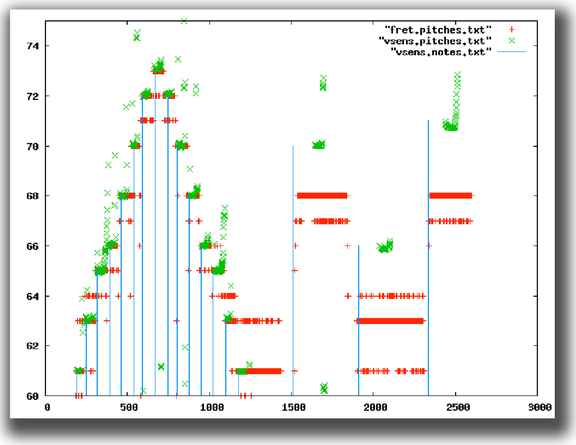
Sensors on Body



Audio Signal

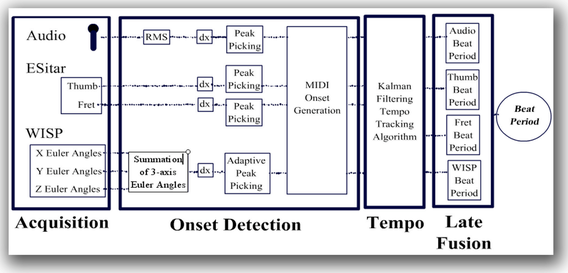
TRANSCRIPTION





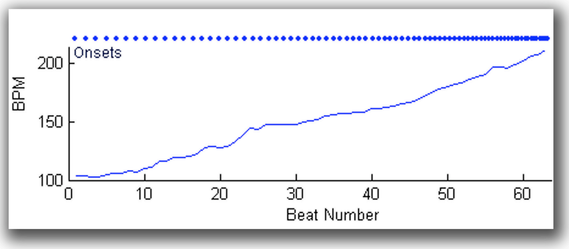
स रे ग म प घानिंसं निंघाप म ग रे स घाम निं
स रे ग म प घा निं सं निं घा प म ग रे स प रे प

TEMPO TRACKING



Signal	Tempo (BPM)			
	80	*100*	*120*	*140*
Audio	46%	85%	86%	80%
Fret	27%	27%	57%	56%
Thumb	35%	62%	75%	65%
WISP	50%	91%	69%	53%
LATE FUSION:				
Audio/*WISP*/Thumb/Fret	45%	83%	89%	84%
Audio/*WISP*/Thumb	55%	88%	90%	82%
Audio/ *WISP*	58%	88%	89%	72%
Audio/Thumb	57%	88%	90%	80%
WISP/Thumb	47%	95%	78%	69%

$$x_k = \begin{pmatrix} \tau_k \\ \Delta_k \end{pmatrix} = \begin{pmatrix} 1 & \gamma_k \\ 0 & 1 \end{pmatrix} \begin{pmatrix} \tau_{k-1} \\ \Delta_{k-1} \end{pmatrix} + w_k$$



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