Considerations for the next generation of singing tutor

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Abstract

Recently software systems have been proposed to accelerate the progress of singing beginners. The basics of these systems are: the pitch of the sung notes is detected and algorithmic errors removed. Then, an alignment is made with a melodic ground truth, often as a midi representation, using techniques including Dynamic Time Warping and Hidden Markov Models. Although results have been reasonable, significant drawbacks to these alignment schemes include how a ‘musically acceptable’ alignment can be identified, dynamic singer behaviour, multiple repeated notes, and dealing with omitted or extra notes. To this end, a new design for singing analysis system structure is proposed that includes psychoacoustic models and intelligent decision making. The implementation is discussed along with a description of a structured evaluation procedure.