INTRODUCTION

This volume describes the state-of-the-art in musical robots and interactive systems, and is divided into two sections: “Understanding Elements of Musical Performance and Expression” and “Musical Robots and Automated Instruments.” These sections reflect the two main motivations for creating musical robots. The first reason is to further understand ourselves as humans by trying to recreate our mechanisms in algorithms and software. For example, what exactly makes a musical gesture expressive (Chapter 4)? Robots provide a controlled platform for scientific investigation to answer this question. The second motivation is to create more advanced musical robots for art, entertainment and education, and to develop platforms for the first goal. For instance, the flute-playing robot (Chapter 12) has been used as both a teaching robot and investigative platform for expressive play using vibrato. Topics include interfaces, human-robot interaction, synchronization, acoustic music processing, and automation.

Emotion is an important element of music, and ‘emotion’ is mentioned in four of the fifteen chapters of this book. In this review, we highlight these projects and their contribution to the body of emotion research.

Sound-Action Chunks in Music

In Chapter 2, Godoy looks at the various time scales at which we can group emotion-related features. For example, music can be labeled as ‘harmonic,’ ‘dark,’ ‘bright,’ ‘smooth,’ ‘rough,’ and so on. But how long does one need in order to label a passage as such? He defines the smallest level at less than 0.5 seconds, where one can perceive fast fluctuations such as tremolo and trill, and ‘grain’—fluctuations in pitch, intensity and timbre. He refers to this as the sub-chunk
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