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Database of Piano Chords

An Engineering View of Harmony



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ISSN 2191-8112 ISSN 2191-8120 (electronic) ISBN 978-1-4614-7475-3 ISBN 978-1-4614-7476-0 (eBook) DOI 10.1007/978-1-4614-7476-0 Springer New York Heidelberg Dordrecht London

Library of Congress Control Number: 2013937729

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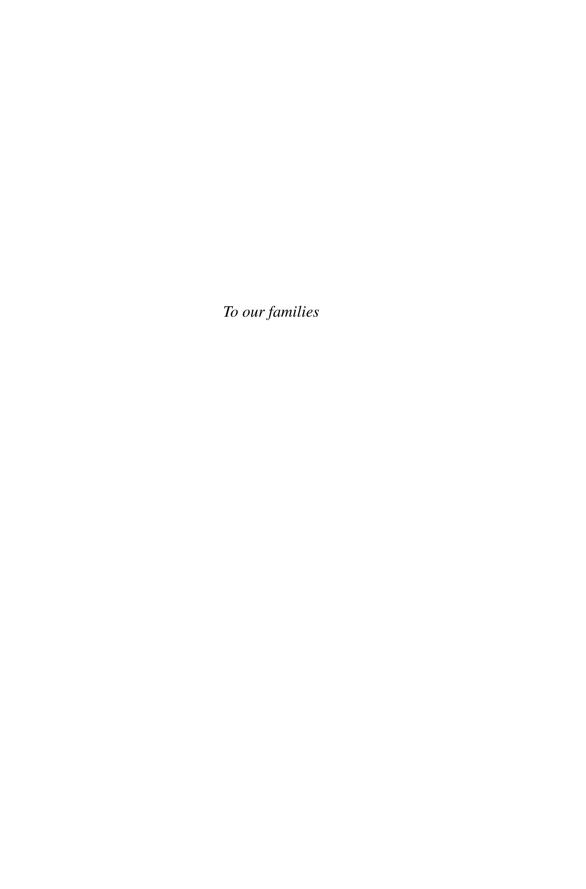
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Preface

Transcription of music can be defined as the process of analysing an acoustic musical signal with the aim of writing down the musical parameters of the sound. Automatic transcription of music has been a subject of increasing interest during the last decades. This task can be faced dividing the targeted musical signals into two main categories: monophonic musical signals, leading to the transcription of music in which single notes sound, and polyphonic musical signals, related to the transcription of music in which several notes sound simultaneously.

One of the first main problems that a researcher in automatic music transcription has to face is that of the availability of an appropriate music database. The database must contain a sufficiently large number of samples to train and test a transcription system. Also, note that the database should provide with the correct annotation of each sample.

Musical instrument databases commonly used only contain individual notes of the instruments considered. This issue easily constitutes a serious drawback for piano-related activities since it is a polyphonic instrument in which the transcription of polyphonic sounds plays an important role.

The purpose of this book is to present a database of piano chords that can be used in research tasks in the context of polyphonic piano transcription.

When we originally conceived this project in the *Universidad de Málaga* (UMA) in 2007, the objective was simple: to design a database of piano chords that could be used in our research activities on polyphonic piano transcription. As time passed, the concept of the database grew larger and larger, as well as the interest in the international community for this sort of resources. Finally in 2011, we decided to look for a publisher for our work. In the IEEE ICASSP2011 Conference in Prague, we finally found that a highly prestigious publisher, Springer, was interested in our work.

Now, we have developed the most complete database of piano chords that exist nowadays and a book that supports it.

This book is mainly intended for researchers and graduate students in automatic music analysis and transcription systems. Sometimes, the knowledge of the researches on Western harmony is limited and the books of harmony are

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strongly oriented to musicians. Trying to fill this gap, this book contains an engineering view of harmony. The descriptions included should help researchers to understand the foundations of Western harmony and to comprehend the content of the presented UMA-Piano chord database. Thus, Chap. 2 contains the foundations of harmony. This chapter is self-contained and it can be used to study Western harmony independently of the database developed. Afterwards, Chap. 3 provides a detailed description of the database. This description is completed with the help of Appendix A in which all the types of recorded chords are summarised including musical examples. Finally, Chap. 4 presents the summary and a discussion about the database developed and the possibility of future improvements.

The piano chords database can be found at http://Extras.Springer.com.

The authors are grateful to the many people who have helped both directly and indirectly to write this book and to compile the complete database presented. The database is expanding and the authors will thank collaborations that help to grow and improve the database.

This work has been funded by the Ministerio de Economía y Competitividad of the Spanish Government under Project No. TIN2010-21089-C03-02 and Project No. IPT-2011-0885-430000 and by the Ministerio de Industria, Turismo y Comercio, under Project No. TSI-090100-2011-25.

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