

Preface

The past decade has seen a revolution in the field of spoken dialogue systems. As in other areas of Computer Science and Artificial Intelligence, data-driven methods are now being used to drive new methodologies for system development and evaluation. These methods are proving to be more robust, flexible, and adaptive than the largely rule-based approaches which preceded them.

We hope that this book is a contribution to that ongoing change. It describes, in detail, a new methodology for developing spoken dialogue systems – in particular the Dialogue Management and Natural Language Generation components – which starts with human data, and culminates in evaluation with real users. The journey therefore starts and ends with human behaviour in interaction, and explores methods for learning from the data, for building simulation environments for training and testing systems, and for evaluating the results.

The detailed material covers: Spoken and Multimodal dialogue systems, Wizard-of-Oz data collection, User Simulation methods, Reinforcement Learning, and Evaluation methodologies.

This book is therefore intended as research guide which navigates through a detailed case study in data-driven methods for development and evaluation of spoken dialogue systems. Common challenges associated with this approach are discussed and example solutions provided, for example, how to learn from limited amounts of data. As such, we hope it will provide insights, lessons, and inspiration for future research and development – not only for spoken dialogue systems in particular, but for data-driven approaches to human-machine interaction in general.

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