

Preface

The aim of this book is to present a broad spectrum of current research in hybrid neural systems, and advance the state of the art in neural networks and artificial intelligence. Hybrid neural systems are computational systems which are based mainly on artificial neural networks but which also allow a symbolic interpretation or interaction with symbolic components.

This book focuses on the following issues related to different types of representation: How does neural representation contribute to the success of hybrid systems? How does symbolic representation supplement neural representation? How can these types of representation be combined? How can we utilize their interaction and synergy? How can we develop neural and hybrid systems for new domains? What are the strengths and weaknesses of hybrid neural techniques? Are current principles and methodologies in hybrid neural systems useful? How can they be extended? What will be the impact of hybrid and neural techniques in the future?

In order to bring together new and different approaches, we organized an international workshop. This workshop on hybrid neural systems, organized by Stefan Wermter and Ron Sun, was held during December 4–5, 1998 in Denver. In this well-attended workshop, 27 papers were presented. Overall, the workshop was wide-ranging in scope, covering the essential aspects and strands of hybrid neural systems research, and successfully addressed many important issues of hybrid neural systems research. The best and most appropriate paper contributions were selected and revised twice. This book contains the best revised papers, some of which are presented as state-of-the-art surveys, to cover the various research areas of the collection.

This selection of contributions is a representative snapshot of the state of the art in current approaches to hybrid neural systems. This is an extremely active area of research that is growing in interest and popularity. We hope that this collection will be stimulating and useful for all those interested in the area of hybrid neural systems.

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