Foreword

I am very pleased to have this opportunity to write a foreword to *Automated Planning: Theory and Practice.* With this wonderful text, three established leaders in the field of automated planning have met a long-standing need for a detailed, comprehensive book that can be used both as a text for college classes—complete with student exercises—and as a reference book for researchers and practitioners. In recent years, comprehensive texts have been written for several of the other major areas of Artificial Intelligence (AI), including machine learning, natural-language processing, and constraint satisfaction processing, but until now, the field of planning has been devoid of such a resource, despite the considerable number of advances in and the significant maturation of planning research in the past decade. With *Automated Planning: Theory and Practice,* Dana Nau, Malik Ghallab, and Paolo Traverso have filled that void and have done so with a remarkably clear and well-written book.

The authors made an important decision about what to emphasize in the text. Although, as they point out in the Preface, "the bulk of research on automated planning focuses on ... classical planning," they decided not to devote a proportional amount of their text to this restrictive framework but instead to showcase and emphasize techniques that move beyond the classical strictures. They don't ignore classical techniques: indeed, they provide a comprehensive coverage of them. But they then go on to provide ample coverage of such topics as temporal planning and resource scheduling, planning under uncertainty, and the use of a wide range of modern techniques for plan generation, including propositional satisfiability, constraint satisfaction, and model checking.

Making good on its name, the book also includes a large section on the practice of AI planning, including several case studies both of application classes such as robot planning and of specific fielded applications such as the Deep Space 1 Remote Agent and the Bridge Baron game player. These case studies illustrate the process by which the relatively generic methods of automated planning are transformed into powerful domain-dependent tools and also show that, as a result of this transformation, automated planning can be made useful—that planning is good for much more than just stacking towers of blocks. (Now if only I could transform my own bridge-playing strategies so effectively!)

Automated Planning: Theory and Practice is a terrific contribution to the AI literature and will be widely used not only by those of us already active in the field of planning but also by our students and colleagues who want to know more this important area of research.

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