Andrzej Szepietowski

Turing Machines with Sublogarithmic Space

Springer-Verlag
Berlin Heidelberg New York
London Paris Tokyo
Hong Kong Barcelona
Budapest

Lecture Notes in Computer Science 843
Edited by G. Goos and J. Hartmanis

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CR Subject Classification (1991): F.1.1, F.4.1

ISBN 3-540-58355-6 Springer-Verlag Berlin Heidelberg New York
ISBN 0-387-58355-6 Springer-Verlag New York Berlin Heidelberg

CIP data applied for

Printed in Germany

Typesetting: Camera-ready by author
SPIN: 10475435 45/3140-543210 - Printed on acid-free paper

Preface

The main objects of investigation of space complexity theory are Turing machines with bounded space (the number of cells on the tape used during computation) and languages accepted by such machines. Although some important problems still remain open, much work has been done, and many exciting results have been obtained. Many of these results, however, have been proved under the assumption that the amount of available space is at least logarithmic with respect to the length of the input.

In this book I have presented the key result on space complexity, but concentrated on problems: What happens when we drop the assumption of at least logarithmic space and what do languages acceptable with sublogarithmic space look like?

The manuscript for this book was written at the Technical University of Gdansk and Gdansk University from 1991 to 1992. Parts of the manuscript were used as notes for lectures given at these universities. I want to thank the participants in these courses for their criticism. The final corrections to the manuscript were made during my stay at the University of Paderborn in 1994 under an Alexander von Humboldt Research Fellowship.

I would like to express my profound gratitude to Professor A.W. Mostowski for his encouragement and advice.

I owe a special debt to an anonymous referee for his or her helpful comments, to Mrs. K. Mostowska and J. Skurczyński for their careful reading of the original version of the manuscript, and to L. Chańko for helping me with typesetting the manuscript in TEX.

Paderborn, May 1994 Andrzej Szepietowski

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