

Lecture Notes in Artificial Intelligence 3176

Edited by J. G. Carbonell and J. Siekmann

Subseries of Lecture Notes in Computer Science

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Gunnar Rätsch (Eds.)

Advanced Lectures on Machine Learning

ML Summer Schools 2003

Canberra, Australia, February 2-14, 2003

Tübingen, Germany, August 4-16, 2003

Revised Lectures



Springer

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Library of Congress Control Number: 2004111357

CR Subject Classification (1998): I.2.6, I.2, F.1, F.2, I.5

ISSN 0302-9743

ISBN 3-540-23122-6 Springer Berlin Heidelberg New York

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© Springer-Verlag Berlin Heidelberg 2004
Printed in Germany

Typesetting: Camera-ready by author, data conversion by Scientific Publishing Services, Chennai, India
Printed on acid-free paper SPIN: 11322894 06/3142 5 4 3 2 1 0

Preface

Machine Learning has become a key enabling technology for many engineering applications, investigating scientific questions and theoretical problems alike. To stimulate discussions and to disseminate new results, a series of summer schools was started in February 2002. One year later two more of such summer schools were held, one at the Australian National University in Canberra, Australia, and the other one in the Max-Planck Institute for Biological Cybernetics, in Tübingen, Germany.

The current book contains a collection of main talks held during those two summer schools, presented as tutorial chapters on topics such as Pattern Recognition, Bayesian Inference, Unsupervised Learning and Statistical Learning Theory. The papers provide an in-depth overview of these exciting new areas, contain a large set of references, and thereby provide the interested reader with further information to start or to pursue his own research in these directions.

Complementary to the book, photos and slides of the presentations can be obtained at

<http://mlg.anu.edu.au/summer2003>

and

<http://www.irccyn.ec-nantes.fr/mlschool/mlss03/home03.php>.

The general entry point for past and future Machine Learning Summer Schools is

<http://www.mlss.cc>

It is our hope that graduate students, lecturers, and researchers alike will find this book useful in learning and teaching Machine Learning, thereby continuing the mission of the Machine Learning Summer Schools.

Tübingen, June 2004

Olivier Bousquet
Ulrike von Luxburg
Gunnar Rätsch

Empirical Inference for Machine Learning and Perception
Max-Planck Institute for Biological Cybernetics

Acknowledgments

We gratefully thank all the individuals and organizations responsible for the success of the summer schools.

Local Arrangements

Canberra

Special thanks go to Michelle Moravec and Heather Slater for all their support during the preparations, to Joe Elso, Kim Holburn, and Fergus McKenzie-Kay for IT support, to Cheng Soon-Ong, Kristy Sim, Edward Harrington, Evan Greensmith, and the students at the Computer Sciences Laboratory for their help throughout the course of the Summer School.

Tübingen

Special thanks go to Sabrina Nielebock for all her work during the preparation and on the site, to Dorothea Epting and the staff of the Max Planck Guest House, to Sebastian Stark for IT support, to all the students and administration of the Max-Planck Institute for Biological Cybernetics for their help throughout the Summer School.

Sponsoring Institutions

Canberra

- Research School of Information Sciences and Engineering, Australia
- The National Institute of Engineering and Information Science, Australia

Tübingen

- Centre National de la Recherche Scientifique, France
- French-German University
- Max-Planck Institute for Biological Cybernetics, Germany

Speakers

Canberra

Shun-Ichi Amari	Gabor Lugosi	Petra Phillips
Eleazar Eskin	Jyrki Kivinen	Gunnar Rätsch
Zoubin Ghahramani	John Lloyd	Alex Smola
Peter Hall	Shahar Mendelson	S.V.N. Vishwanathan
Markus Hegland	Mike Osborne	Robert C. Williamson

Tübingen

Christophe Andrieu	André Elisseeff	Steve Smale
Pierre Baldi	Arthur Gretton	Alex Smola
Léon Bottou	Peter Grünwald	Vladimir Vapnik
Stéphane Boucheron	Thorsten Joachims	Jason Weston
Olivier Bousquet	Massimiliano Pontil	Elad Yom-Tov
Chris Burges	Carl Rasmussen	Ding-Xuan Zhou
Jean-François Cardoso	Mike Tipping	
Manuel Davy	Bernhard Schölkopf	

Organization Committees

Canberra: Gunnar Rätsch and Alex Smola

Tübingen: Olivier Bousquet, Manuel Davy, Frédéric Desobry,
Ulrike von Luxburg and Bernhard Schölkopf

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