Advanced Lectures on Machine Learning

ML Summer Schools 2003
Canberra, Australia, February 2-14, 2003
Tübingen, Germany, August 4-16, 2003
Revised Lectures

Springer
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

\[ \text{http://mlg.anu.edu.au/summer2003} \]
and
\[ \text{http://www.irccyn.ec-nantes.fr/mlschool/mlss03/home03.php}. \]

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

\[ \text{http://www.mlss.cc} \]

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

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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

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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

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Eleazar Eskin
Zoubin Ghahramani
Peter Hall
Markus Hegland

Gabor Lugosi
Jyrki Kivinen
John Lloyd
Shahar Mendelson
Mike Osborne

Petra Phillips
Gunnar Rätsch
Alex Smola
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Tübingen

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