The Ninth International Conference on

Algorithmic Learning Theory

Otzenhausen, Germany
October 8–10, 1998

ALT'98 – Conference Program

The Ninth International Conference on Algorithmic Learning Theory (ALT'98 will be held at the European education centre Europäisches Bildungszentrum (ebz) Otzenhausen, Germany, October 8–10, 1998. The Conference is sponsored by the Japanese Society for Artificial Intelligence (JSAI) and the University of Kaiserslautern.

This conference is the ninth in a series of annual meetings established in 1990. The ALT series is focusing on all areas related to algorithmic learning theory including (but not limited to): the theory of machine learning, the design and analysis of learning algorithms, computational logic of/for machine discovery, inductive inference of recursive functions and recursively enumerable languages, learning via queries, learning by artificial and biological neural networks, pattern recognition, learning by analogy, statistical learning, Bayesian/MDL estimation, inductive logic programming, robotics, application of learning to databases, gene analyses, etc.

Starting with this year, the ALT-series will further endeavor to bring both the theoretical and experimental communities under one umbrella by organizing a satellite workshop on *applied learning theory* before or after the annual meeting. Ideally, people in theory should benefit by learning about challenging research problems which arose in practice, and people in application may benefit by getting answers to their problems from theoreticians. Putting these two activities under the unifying ALT-logo gave rise to rename the ALT-series into *annual Conference on Algorithmic Learning Theory.*

The conference program comprises 26 lectures selected by the program committee. Additionally, we are are fortunate to present invited lectures by:

Akira Maruoka, Tohoku University, Sendai

Arun Sharma, University of New South Wales

Stefan Wrobel, GMD

PROGRAM

REGISTRATION:

Thursday, October 8, from 10.00 to 13:15 at the European Academy, Otzenhausen

Thursday, October 8, Afternoon

13.30–13.40 **Opening:** Michael M. Richter

SESSION 1: Thursday, October 8, Afternoon

Chair: Rolf Wiehagen

13.40–14.40 : **Invited Talk** by Stefan Wrobel

ILP for Data Mining: Theoretical, Algorithmical and Practical Aspects of Scalability

SESSION 2: Thursday, October 8, Afternoon

Chair: Steffen Lange

14.40–15.05 : J. Case, M. Ott, A. Sharma and F. Stephan

Learning To Win Process-Control Games Watching Game-Masters

15.05–15.30 : K. Apsītis, R. Freivalds, R. Simanovskis and J. Smotrovs

Closedness Properties in EX-identification of Recursive Functions

Coffee Break

SESSION 3: Thursday, October 8, Afternoon

Chair: Sanjay Jain

16.30–16.55 : V.N. Shevchenko and N.Yu. Zolotykh

Lower Bounds for the Complexity of Learning Half-Spaces with Membership Queries

16.55–17.20 : M. Fischlin

Cryptographic Limitations on Parallelizing Membership and Equivalence Queries

17.20–17.45 : G. Melideo and S. Varricchio

Learning Unary Output Two-Tape Automata from Multiplicity and Equivalence Queries

17.45–18.10 : P. Damaschke

Computational Aspects of Parallel Attribute-Efficient Learning

18.10–18.35 : F. Denis

PAC Learning with Positive Statistical Queries

Dinner Break

20.00–20.45 : **Business Meeting**

SESSION 4: Friday, October 9, Morning

Chair: Thomas Zeugmann

9.00–10.00 : **Invited Talk** by Akira Maruoka (co-authored by E. Takimoto)

Structured Weight-Based Prediction Algorithms

Coffee Break

SESSION 5: Friday, October 9, Morning

Chair: Stefan Wrobel

10.20–10.45 : M.K.R. Krishna Rao and A. Sattar

Learning from Entailment of Logic Programs with Local Variables

10.45–11.10 : A. Yamamoto

Logical Aspects of Several Bottom-up Fittings

11.10–11.35 : N. Sugimoto

Learnability of Translations from Positive Examples

11.35–12.00 : K. Satoh

Analysis of Case-Based Representability of Boolean Functions by Monotone Theory

Lunch Break

SESSION 6: Friday, October 9, Afternoon

Chair: Arun Sharma

13.30–13.55 : T. Head, S. Kobayashi and T. Yokomori

Locality, Reversibility, and Beyond: Learning Languages from Positive Data

13.55–14.20 : J. Case and S. Jain

Synthesizing Learners Tolerating Computable Noisy Data

14.20–14.45 : M. Sato, Y. Mukouchi and D. Zheng

Characteristic Sets for Unions of Regular Pattern Languages and Compactness

14.45–15.10 : H. Sakamoto

Finding a One-Variable Pattern from Incomplete Data

15.10–15.35 : H. Arimura, A. Wataki, R. Fujino and S. Arikawa

A Fast Algorithm for Discovering Optimal String Patterns in Large Text Databases

Coffee Break

SESSION 7: Friday, October 9, Afternoon

Chair: Akira Maruoka

16.30–16.55 : E. Hirowatari and S. Arikawa

A Comparison of Identification Criteria for Inductive Inference of Recursive Real-Valued Functions

16.55–17.20 : J. Case, S. Jain, S. Kaufmann, A. Sharma and F. Stephan

Predictive Learning Models for Concept Drift

17.20–17.45 : S. Jain

Learning with Refutation

17.45–18.10 : L. Meyer

Comparing the Power of Probabilistic Learning and Oracle Identification under Monotonicity Constraints

18.10–18.35 : F. Stephan and Y. Ventsov

Learning Algebraic Structures from Text using Semantical Knowledge

Conference Dinner

SESSION 8: Saturday, October 10, Morning

Chair: Michael M. Richter

9.00–10.00 : **Invited Talk** by Arun Sharma

What can Inductive Inference do for ILP?

Coffee Break

SESSION 9: Saturday, October 10, Morning

Chair:

10.20–10.45 : M. Schmitt

On the Sample Complexity for Neural Trees

10.45–11.10 : K. Verbeurgt

Learning Sub-Classes of Monotone DNF on the Uniform Distribution

11.10–11.35 : J. Bārzdiņš and U. Sarkans

Using Attribute Grammars for Description of Inductive Inference Search Space

11.35–12.00 : G. Grieser, K.P. Jantke and S. Lange

Towards the Validation of Inductive Learning Systems

12.00–12.25 : W. Stein

Consistent Polynomial Identification in the Limit

12.30: Adjorn

Acknowledgements

Conference Chair:

Michael M. Richter (University of Kaiserslautern, Germany)

Conference Co-Chair:

Carl Smith (University of Maryland, College Park, USA)

Local Arrangement Chair:

Michael M. Richter and Edith Hüttel (University of Kaiserslautern, Germany)

Program Committee:

P. Bartlett (ANU, Australia)
S. Ben-David (Technion, Israel)
S. Dzeroski (Jozef Stefan Institute, Slovenia)
R. Gavaldà (Univ. de Catalunya, Spain)
L. Hellerstein (Polytechnic Univ., USA)
S. Jain (National Univ. Singapore)
S. Lange (Univ. Leipzig, Germany)
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H. Motoda (Osaka Univ., Japan)
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K. Satoh (Hokkaido Univ., Japan)
T. Shinohara (Kyutech, Japan)
E. Ukkonen (Helsinki Univ., Finland)
R. Wiehagen (Univ. Kaiserslautern, Germany, Chair)
T. Zeugmann (Kyushu University, Japan, Co-Chair)

The continuing success of these ALT-meetings has been managed and supervised by its

Steering Committee:

Setsuo Arikawa (Kyushu University, Chair)
Takashi Yokomori (Waseda Univ., Tokyo)
Hiroshi Imai (University of Tokyo)
Teruyasu Nishizawa (Niigata University)
Akito Sakurai (JAIST, Tokyo)
Taiske Sato (Tokyo Inst. Technology)
Takeshi Shinohara (Kyushu Inst. Technology)
Masayuki Numao (Tokyo Inst. Technology)
Yuji Takada (Fujitsu, Fukuoka)

Conference Information

Location: Otzenhausen is situated in the central European region Sar-Lor-Lux, not far from Strasbourg and Luxembourg. It's location in the hilly landscape of the Hochwald in the north of the Saarland makes it a meeting place where others spend their holidays.

Weather: Weather in October is usually rapidly changing. It may be still warm and sunny, but it may be also cold and rainy. The average temperature is approximately 15^oC.

Conference Site: The conference will be held at the European education centre *Europäisches Bildungszentrum* (ebz) Otzenhausen, Europahausstraße, 66620 Nonnweiler, Phone: 06873-6620, Fax: 06873-662-150.

Getting to the conference site:

Participants from abroad may choose between the international airports in Frankfurt am Main and Luxembourg. If you arrive in Frankfurt, you should take a train to Türkismühle. From there, you can reach Otzenhausen by bus. Attendees travelling via Luxembourg are requested to take a train to Trier or Saarbrücken, and then continue by bus. For more information, please visit our web-site:

http://www.i.kyushu-u.ac.jp/~thomas/ALT98/alt98.html

Accomodation:

All participants are accomodated at the European education centre. Please indicate in your registration what type of room you prefer (single or double).

Registration:

Please complete the attached registration form or register via our on-line registration form on the web-page

http://www.i.kyushu-u.ac.jp/~thomas/ALT98/regist.html

If you prefer not to register on-line, please return your registration form by email, ordinary mail or fax (by September 6, 1998 to enjoy the early registration fee) to:

Mrs. Edith Hüttel
Universitaet Kaiserslautern
FB Informatik - AG Expertensysteme
Postfach 3049
D-67653 Kaiserslautern, Germany
email: huettel@informatik.uni-kl.de
Fax: +49-631-205-3357

Registration Form

Last name: ______________________

First name(s): ______________________

Affiliation: ______________________

Mailing address: ______________________

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EMail address: ______________________

Telephone: ______________________

Fax: ______________________

Registration fee:

The registration fee includes a copy of the proceedings, the conference dinner as well as your accomodation fee and all meals (breakfast, lunch, dinner) during the conference. If you want to register as a full-time student, you must provide a certificate of your university at the registration on October 8, 1998, or, alternatively, you may send it by mail to the address shown above.

Before September 6, 1998:

Registration fee:	550,00 DM
Student registration fee:	250,00 DM

After September 6, 1998:

Registration fee:	600,00 DM
Student registration fee:	280,00 DM

Please mark here:

[ ] Standard registration
[ ] Full-time student registration

(a) ______________ DM

Accompanying person(s) are requested to pay 425,00 DM (including accomodation and all meals).

Name(s) of accompanying person(s):

____

____

(b) ______________ DM

Please check here if you wish to buy an extra banquet ticket for accompanying person(s). The price per ticket is 50,00 DM.

[ ] extra banquet ticket(s) on Oct. 9, 1998
(c) ______________ DM

Total Amount (= Registration + Banquet)
(a+b+c) ______________ DM

Please choose the level of accommodation. Note that students are accomodated in double rooms.

[ ] Single room
[ ] Double room

sharing room with:

____

[ ] Please find a roommate for me

Date of arrival: __________ Time: __________

Date of departure: __________ Time: __________

Additional information, special requirements or dietary restrictions: ______________________

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Payment:

All participants are kindly requested to pay ALL fees in **cash** in DM (Deutsche Mark) at the conference registration on Thursday, October 8, 1998.

No advance payment is required, and other currencies as well as credit cards or cheques are *not* acceptable for this purpose.