

Norwegian Artificial Intelligence Symposium 2009

(NAIS 2009)

**Trondheim, Norway
23 November 2009**

Editors:

**Anders Kofod-Petersen
Helge Langseth**

Odd Erik Gundersen

ISBN: 978-1-61738-871-2

Printed from e-media with permission by:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571



Some format issues inherent in the e-media version may also appear in this print version.

Copyright© (2009) by Tapir Academic Press
All rights reserved.

Printed by Curran Associates, Inc. (2010)

For permission requests, please contact Tapir Academic Press
at the address below.

Tapir Academic Press
Nardoveien 12
NO-7005 Trondheim
Norway

Phone: + 47 73 59 32 10
Fax: + 47 73 59 32 04

forlag@tapir.no

Additional copies of this publication are available from:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: 845-758-0400
Fax: 845-758-2634
Email: curran@proceedings.com
Web: www.proceedings.com

Contents

Bio-inspired Methods

Robotics and Intelligent Systems at University of Oslo	3
<i>J. Torresen, K. Glette, A. R. Jensenius, M. Furuholmen</i>	
Kunstig evolusjon for biologisk inspirert robotdesign	7
<i>K. Glette, M. Høvin</i>	
Scalability and complexity challenges in evolutionary digital design heuristics	11
<i>M. Hartmann</i>	
Evolvable Machines: An EvoDevo Approach	17
<i>G. Tufte</i>	
Adapting to Fluctuating Environments – Learning from Living Systems	29
<i>D. Laketic, G. Tufte</i>	
Computational Explorations of the Baldwin Effect	41
<i>K. Downing</i>	

Probabilistic Systems

Risk Assessments in Fisheries Surveillance: A Case Study in Knowl- edge Engineering with Bayesian Networks	55
<i>B. Tessem</i>	
Bayesian Networks for Collaborative Filtering	67
<i>H. Langseth</i>	
Improving text categorization using hyperlinks in external knowl- edge repository	79
<i>R. R. Prasath, S. Sakar</i>	

Application of AI

Closed Doors – Modelling Intention in Behavioural Interfaces . . . 93
A. Kofod-Petersen, R. Wegener, J. Cassens

BusTUC – a savant level intelligent bus oracle 103
T. Amble

Feature Extraction and Knowledge Management for Process Plan-
 ning 111
K. Bø

Case-based Reasoning

An Introspective Component-Based Approach for Meta-Level Rea-
 soning in Clinical Decision Support Systems 121
T. G. Houeland, A. Aamodt

Case-based Reasoning on Streaming Data 133
O. E. Gundesen, F. Sørmo

Integrated Reasoning Systems – A Knowledge-Level Perspective
 with a Case Based Bias 143
A. Aamodt

General AI Methods

An interactive 3D CAPTCHA with semantic information 157
C. Winter-Hjelm, M. H. Kleming, R. H. Bakke

Introducing Learning Rate Analogy to the Training of Echo State
 Networks 161
R. A. Løvlid

Possibilities for Learning in Game Artificial Intelligence 169
A. Jacobsen, S. B. Stene, S. Yildirim

A Comparison of Learning Based Background Subtraction Tech-
 niques Implemented in CUDA 181
E. Fauske, L. M. Eliassen, R. H. Bakken

Author Index 193