Proceedings of the

# Thirteenth International Workshop on Principles of Diagnosis

## (DX-02)

Semmering, Austria 2-4 May 2002

Sponsored by

AVL DiTEST

European Office of Aerospace Research and Development of the USAF

Materna

OCC'M Software

Siemens Austria, PSE PRO, CES Design Services

Austrian Computer Society

Austrian Society for Artificial Intelligence

European Network of Excellence in Computational Logic (COLOGNET)



### Thirteenth International Workshop on Principles of Diagnosis (DX-02)

### **Conference Committee**

#### **Program Chairs**

Markus Stumptner Franz Wotawa University of South Australia, Adelaide TU Graz, Austria

#### **Program Committee**

Bert Bredeweg Marie-Odile Cordier Mireille Ducassé Daniele Theseider Dupré Yousri El Fattah Jan Lunze Pieter J. Mosterman Chris Price **Bernhard Rinner** Meera Sampath Howard E. Shrobe Peter Struss Patrick Taillibert Mugur Tatar Takashi Washio Marina Zanella Feng Zhao

University of Amsterdam, Netherlands Irisa, France Irisa, France Universitá Piemonte Orientale, Italy Rockwell, USA Ruhr-Universität Bochum, Germany The MathWorks Inc., USA University of Wales, UK TU Graz, Austria Xerox, USA MIT, USA Occ'm Software and TU München, Germany Thales, France DaimlerChrysler, Germany Osaka University, Japan Universitá di Brescia, Italy Xerox PARC, USA

#### Foreword

The Thirteenth International Workshop on Principles of Diagnosis (DX 02) is the latest in a series of annual workshops that focus on the presentation and exchange of current results in the field of diagnosis and related areas, including tasks such as monitoring, fault identification and isolation, testing, reconfiguration and repair. The workshops are historically centered on approaches from the Artificial Intelligence (AI) community, but aim at supporting wide range of different techniques and methodologies, as well as the integration of other research communities such as Process Engineering and FDI.

The papers included in this volume span a wide range of techniques and application areas, including such domains as complex hardware systems, software and knowledge bases, secure systems, and design problems, and deal with discrete and continuous, algebraic, logic-, constraint-, structure-, and probability-based approaches, dynamic and temporal systems, distribution and abstraction, and non-symbolic methods of diagnosis. They bear witness to the continuing existence of fertile ground for further theoretical and applied research.

The invited talks continue the choice of earlier workshops to bring in new and varying viewpoints to provide a wider context to the problem area, and address issues from related and neighboring areas of interest to the diagnosis community: constraint satisfaction, problem decomposition, and debugging.

We wish to thank the authors of the submitted papers, the program committee members, at least two of which reviewed each of the submitted full papers, for the time and effort spent, and the invited speakers for their participation. We especially wish to thank Sheila McIlraith for her help in organizing the review process.

We would also like to acknowledge the support of our sponsors for their contribution to the success of this workshop:

- AVL DiTEST
- COLOGNET
- European Office of Aerospace Research and Development, Air Force Office of Scientific Research, United States Air Force Research Laboratory
- Materna
- OCC'M Software
- Austrian Computer Society (OCS)
- Austrian Artificial Intelligence Society (OEGAI)
- Siemens Austria, PSE PRO, CES Design Services
- TU Graz, IICM Software Technology
- TU Wien, Institut für Informationssysteme

Markus Stumptner and Franz Wotawa

April, 2002

## Content

Richard Dearden and Dan Clancy         Hybrid Modeling and Diagnosis in the Real World: A Case Study Sriram Narasimhan, Gautam Biswas, Gabor Karsai, Tivadar Szemethy, Tim Bowman, Mark Kay, and Kirby Keller         A Model-Based Diagnosis Framework for Distributed Systems 1         Gregory Provan         Model-based Tools for the Integration of Design and Diagnosis into a         Common Process – A Project Report	Particle Filters for Real-Time Fault Detection in Planetary Rovers	1
Hybrid Modeling and Diagnosis in the Real World: A Case Study       Sriram Narasimhan, Gautam Biswas, Gabor Karsai, Tivadar Szemethy, Tim Bowman, Mark Kay, and Kirby Keller         A Model-Based Diagnosis Framework for Distributed Systems       Image: Comparison of Design and Diagnosis into a Common Process – A Project Report         Model-based Tools for the Integration of Design and Diagnosis into a Common Process – A Project Report       Image: Comparison of Design and Diagnosis into a Common Process – A Project Report         Suggestions from the software engineering practice for applying consistency-based diagnosis to configuration knowledge bases       Image: Consistency-based diagnosis to configuration knowledge bases         Colin N. Jones, Gregory W. Bond and Peter D. Lawrence       Merging Indiscriminable Diagnoses: An Approach Based on Automatic Domains Abstraction         Mattias Krysander and Mattias Nyberg       Diagnostic Reasoning with Multilevel Set-Covering Models         Diagnostic Reasoning with Multilevel Set-Covering Models       Image: Computing Minimal Conflicts for Rich Constraint Languages         A Model Counting Characterization of Diagnoses       Image: Computing Minimal Hitting Sets with Genetic Algorithm         Computing Minimal Hitting Sets with Genetic Algorithm       Image: Computing Minimal Hitting Sets with Genetic Algorithm         Model-Based Diagnosis for Information Survivability       Image: Computing Minimal Hitting Sets with Genetic Algorithm         Model Counting Characterization of Diagnoses       Image: Computing Minimal Hitting Sets with Genetic Algorithm	Richard Dearden and Dan Clancy	
Sriram Narasimhan, Gautam Biswas, Gabor Karsai, Tivadar Szemethy, Tim Bowman, Mark Kay, and Kirby Keller         A Model-Based Diagnosis Framework for Distributed Systems 1         Gregory Provan         Model-based Tools for the Integration of Design and Diagnosis into a         Common Process – A Project Report	Hybrid Modeling and Diagnosis in the Real World: A Case Study	7
Tivadar Szemethy, Tim Bowman, Mark Kay, and Kirby Keller         A Model-Based Diagnosis Framework for Distributed Systems         Gregory Provan         Model-based Tools for the Integration of Design and Diagnosis into a         Common Process – A Project Report         Peter Struss, B. Rehfus, R. Brignolo, F. Cascio, Luca Console,         Phillippe Dague, P. Dubois, Oskar Dressler, and D. Millet         Suggestions from the software engineering practice for applying         consistency-based diagnosis to configuration knowledge bases         Gerhard Fleischanderl         Consistency-Based Fault Isolation for Uncertain Systems with Applications to Quantitative Dynamic Models         cations to Quantitative Dynamic Models         Colin N. Jones, Gregory W. Bond and Peter D. Lawrence         Merging Indiscriminable Diagnoses: An Approach Based on Automatic Domains Abstraction         Mattias Krysander and Mattias Nyberg         Diagnostic Reasoning with Multilevel Set-Covering Models         Joachim Baumeister and Dietmar Seipel         Computing Minimal Conflicts for Rich Constraint Languages         Jakob Mauss and Mugur Tatar         A Model Counting Characterization of Diagnoses         T.K. Satish Kumar         Computing Minimal Hitting Sets with Genetic Algorithm         Computing Minimal Hitting Sets with Genetic Algorithm         Model-Based Diagnosis for Information Survivability	Sriram Narasimhan, Gautam Biswas, Gabor Karsai,	
A Model-Based Diagnosis Framework for Distributed Systems       I         Gregory Provan       Model-based Tools for the Integration of Design and Diagnosis into a         Common Process – A Project Report       2         Peter Struss, B. Rehfus, R. Brignolo, F. Cascio, Luca Console,       Phillippe Dague, P. Dubois, Oskar Dressler, and D. Millet         Suggestions from the software engineering practice for applying       2         consistency-based diagnosis to configuration knowledge bases       2         Gerhard Fleischanderl       2         Consistency-Based Fault Isolation for Uncertain Systems with Applications to Quantitative Dynamic Models       2         colin N. Jones, Gregory W. Bond and Peter D. Lawrence       4         Merging Indiscriminable Diagnoses: An Approach Based on Automatic Domains Abstraction       4         Nattias Krysander and Mattias Nyberg       5         Diagnostic Reasoning with Multilevel Set-Covering Models       5         Joachim Baumeister and Dietmar Seipel       5         Computing Minimal Conflicts for Rich Constraint Languages       5         Jakob Mauss and Mugur Tatar       7         A Model Counting Characterization of Diagnoses       7         T.K. Satish Kumar       7         Computing Minimal Hitting Sets with Genetic Algorithm       7         Model-Based Diagnosis for Information Survivability       8	Tivadar Szemethy, Tim Bowman, Mark Kay, and Kirby Keller	
Gregory Provan         Model-based Tools for the Integration of Design and Diagnosis into a         Common Process – A Project Report       2         Peter Struss, B. Rehfus, R. Brignolo, F. Cascio, Luca Console, Phillippe Dague, P. Dubois, Oskar Dressler, and D. Millet       2         Suggestions from the software engineering practice for applying       2         consistency-based diagnosis to configuration knowledge bases       2         Gerhard Fleischanderl       2         Consistency-Based Fault Isolation for Uncertain Systems with Appli-       2         cations to Quantitative Dynamic Models       2         Colin N. Jones, Gregory W. Bond and Peter D. Lawrence       2         Merging Indiscriminable Diagnoses: An Approach Based on Auto-       2         matic Domains Abstraction       2         Pietro Torasso and Gianluca Torta       2         Structural Analysis Utilizing MSS Sets with Application to a Paper       2         Plant       2       3         Sugnostic Reasoning with Multilevel Set-Covering Models       2         Joachim Baumeister and Dietmar Seipel       2         Computing Minimal Conflicts for Rich Constraint Languages       2         Jakob Mauss and Mugur Tatar       2         A Model Counting Characterization of Diagnoses       2         T.K. Satish Kumar       2	A Model-Based Diagnosis Framework for Distributed Systems	16
Model-based Tools for the Integration of Design and Diagnosis into a         Common Process – A Project Report       2         Peter Struss, B. Rehfus, R. Brignolo, F. Cascio, Luca Console,       2         Phillippe Dague, P. Dubois, Oskar Dressler, and D. Millet       3         Suggestions from the software engineering practice for applying       3         consistency-based diagnosis to configuration knowledge bases       3         Gerhard Fleischanderl       3         Consistency-Based Fault Isolation for Uncertain Systems with Applications to Quantitative Dynamic Models       3         Colin N. Jones, Gregory W. Bond and Peter D. Lawrence       4         Merging Indiscriminable Diagnoses: An Approach Based on Automatic Domains Abstraction       4         Pietro Torasso and Gianluca Torta       5         Structural Analysis Utilizing MSS Sets with Application to a Paper       5         Plant       5         Mattias Krysander and Mattias Nyberg       5         Diagnostic Reasoning with Multilevel Set-Covering Models       5         Joachim Baumeister and Dietmar Seipel       6         Computing Minimal Conflicts for Rich Constraint Languages       6         Jakob Mauss and Mugur Tatar       7         A Model Counting Characterization of Diagnoses       7         T.K. Satish Kumar       7         Comput	Gregory Provan	
Common Process – A Project Report       2         Peter Struss, B. Rehfus, R. Brignolo, F. Cascio, Luca Console, Phillippe Dague, P. Dubois, Oskar Dressler, and D. Millet         Suggestions from the software engineering practice for applying         consistency-based diagnosis to configuration knowledge bases       3         Gerhard Fleischanderl       6         Consistency-Based Fault Isolation for Uncertain Systems with Applications to Quantitative Dynamic Models       3         colin N. Jones, Gregory W. Bond and Peter D. Lawrence       6         Merging Indiscriminable Diagnoses: An Approach Based on Automatic Domains Abstraction       4         Pietro Torasso and Gianluca Torta       7         Structural Analysis Utilizing MSS Sets with Application to a Paper       7         Plant       5         Mattias Krysander and Mattias Nyberg       7         Diagnostic Reasoning with Multilevel Set-Covering Models       5         Joachim Baumeister and Dietmar Seipel       7         Computing Minimal Conflicts for Rich Constraint Languages       7         Lin Li and Jiang Yunfei       7         Model-Based Diagnosis for Information Survivability       8         Howard Shrobe       7         Observations and Results Gained from the Jade Project       5         Dominik Wieland and Franz Wotawa       7         Hvbrid D	Model-based Tools for the Integration of Design and Diagnosis into a	
Peter Struss, B. Rehfus, R. Brignolo, F. Cascio, Luca Console,         Phillippe Dague, P. Dubois, Oskar Dressler, and D. Millet         Suggestions from the software engineering practice for applying         consistency-based diagnosis to configuration knowledge bases         Gerhard Fleischanderl         Consistency-Based Fault Isolation for Uncertain Systems with Applications to Quantitative Dynamic Models         cations to Quantitative Dynamic Models         Merging Indiscriminable Diagnoses: An Approach Based on Automatic Domains Abstraction         matic Domains Abstraction         Pietro Torasso and Gianluca Torta         Structural Analysis Utilizing MSS Sets with Application to a Paper         Plant         Mattias Krysander and Mattias Nyberg         Diagnostic Reasoning with Multilevel Set-Covering Models         Joachim Baumeister and Dietmar Seipel         Computing Minimal Conflicts for Rich Constraint Languages         T.K. Satish Kumar         Computing Minimal Hitting Sets with Genetic Algorithm         Model-Based Diagnosis for Information Survivability         Model-Based Diagnosis for Information Survivability         Cobservations and Results Gained from the Jade Project         Wolfgang Mayer, Markus Stumptner,         Dominik Wieland and Franz Wotawa	Common Process – A Project Report	25
Phillippe Dague, P. Dubois, Oskar Dressler, and D. Millet         Suggestions from the software engineering practice for applying         consistency-based diagnosis to configuration knowledge bases       3         Gerhard Fleischanderl       Consistency-Based Fault Isolation for Uncertain Systems with Applications to Quantitative Dynamic Models       3         cations to Quantitative Dynamic Models       3         colin N. Jones, Gregory W. Bond and Peter D. Lawrence       4         Merging Indiscriminable Diagnoses: An Approach Based on Automatic Domains Abstraction       4         Pietro Torasso and Gianluca Torta       5         Structural Analysis Utilizing MSS Sets with Application to a Paper       9         Plant       4         Mattias Krysander and Mattias Nyberg       5         Diagnostic Reasoning with Multilevel Set-Covering Models       5         Joachim Baumeister and Dietmar Seipel       6         Computing Minimal Conflicts for Rich Constraint Languages       6         Jakob Mauss and Mugur Tatar       7         A Model Counting Characterization of Diagnoses       7         T.K. Satish Kumar       7         Computing Minimal Hitting Sets with Genetic Algorithm       7         Model-Based Diagnosis for Information Survivability       8         Howard Shrobe       7         Observations an	Peter Struss, B. Rehfus, R. Brignolo, F. Cascio, Luca Console,	
Suggestions from the software engineering practice for applying       2         consistency-based diagnosis to configuration knowledge bases       2         Gerhard Fleischanderl       2         Consistency-Based Fault Isolation for Uncertain Systems with Applications to Quantitative Dynamic Models       2         calin N. Jones, Gregory W. Bond and Peter D. Lawrence       3         Merging Indiscriminable Diagnoses: An Approach Based on Automatic Domains Abstraction       4         Pietro Torasso and Gianluca Torta       5         Structural Analysis Utilizing MSS Sets with Application to a Paper       5         Plant       4         Mattias Krysander and Mattias Nyberg       5         Diagnostic Reasoning with Multilevel Set-Covering Models       5         Joachim Baumeister and Dietmar Seipel       6         Computing Minimal Conflicts for Rich Constraint Languages       6         Jakob Mauss and Mugur Tatar       7         A Model Counting Characterization of Diagnoses       7         T.K. Satish Kumar       7         Computing Minimal Hitting Sets with Genetic Algorithm       7         Model-Based Diagnosis for Information Survivability       8         Howard Shrobe       7         Observations and Results Gained from the Jade Project       9         Wolfgang Mayer, Markus Stumptner,	Phillippe Dague, P. Dubois, Oskar Dressler, and D. Millet	
consistency-based diagnosis to configuration knowledge bases       3         Gerhard Fleischanderl       Consistency-Based Fault Isolation for Uncertain Systems with Applications to Quantitative Dynamic Models       3         colin N. Jones, Gregory W. Bond and Peter D. Lawrence       Merging Indiscriminable Diagnoses: An Approach Based on Automatic Domains Abstraction       4         matic Domains Abstraction       7       7         Pietro Torasso and Gianluca Torta       5         Structural Analysis Utilizing MSS Sets with Application to a Paper       7         Plant       7       7         Mattias Krysander and Mattias Nyberg       7         Diagnostic Reasoning with Multilevel Set-Covering Models       5         Joachim Baumeister and Dietmar Seipel       7         Computing Minimal Conflicts for Rich Constraint Languages       7         T.K. Satish Kumar       7         Computing Minimal Hitting Sets with Genetic Algorithm       7         Lin Li and Jiang Yunfei       7         Model-Based Diagnosis for Information Survivability       8         Howard Shrobe       7         Observations and Results Gained from the Jade Project       9         Wolfgang Mayer, Markus Stumptner,       7         Dominik Wieland and Franz Wotawa       7         Hybrid Diagnosis with Unknown Behavioral Modes </td <td>Suggestions from the software engineering practice for applying</td> <td></td>	Suggestions from the software engineering practice for applying	
Gerhard Fleischander!         Consistency-Based Fault Isolation for Uncertain Systems with Applications to Quantitative Dynamic Models         cations to Quantitative Dynamic Models         Colin N. Jones, Gregory W. Bond and Peter D. Lawrence         Merging Indiscriminable Diagnoses: An Approach Based on Automatic Domains Abstraction         matic Domains Abstraction         Pietro Torasso and Gianluca Torta         Structural Analysis Utilizing MSS Sets with Application to a Paper         Plant         Mattias Krysander and Mattias Nyberg         Diagnostic Reasoning with Multilevel Set-Covering Models         Joachim Baumeister and Dietmar Seipel         Computing Minimal Conflicts for Rich Constraint Languages         Jakob Mauss and Mugur Tatar         A Model Counting Characterization of Diagnoses         T.K. Satish Kumar         Computing Minimal Hitting Sets with Genetic Algorithm         Model-Based Diagnosis for Information Survivability         Howard Shrobe         Observations and Results Gained from the Jade Project         Observations and Results Gained from the Jade Project         Wolfgang Mayer, Markus Stumptner,         Dominik Wieland and Franz Wotawa         Hybrid Diagnosis with Unknown Behavioral Modes	consistency-based diagnosis to configuration knowledge bases	33
Consistency-Based Fault Isolation for Uncertain Systems with Applications to Quantitative Dynamic Models       3         Colin N. Jones, Gregory W. Bond and Peter D. Lawrence       4         Merging Indiscriminable Diagnoses: An Approach Based on Automatic Domains Abstraction       4         Pietro Torasso and Gianluca Torta       5         Structural Analysis Utilizing MSS Sets with Application to a Paper       7         Plant       4         Mattias Krysander and Mattias Nyberg       6         Diagnostic Reasoning with Multilevel Set-Covering Models       5         Joachim Baumeister and Dietmar Seipel       6         Computing Minimal Conflicts for Rich Constraint Languages       6         Jakob Mauss and Mugur Tatar       7         A Model Counting Characterization of Diagnoses       7         T.K. Satish Kumar       7         Computing Minimal Hitting Sets with Genetic Algorithm       7         Model-Based Diagnosis for Information Survivability       8         Howard Shrobe       7         Observations and Results Gained from the Jade Project       9         Wolfgang Mayer, Markus Stumptner,       7         Dominik Wieland and Franz Wotawa       7         Hybrid Diagnosis with Unknown Behavioral Modes       7	Gerhard Fleischanderl	
cations to Quantitative Dynamic Models       3         Colin N. Jones, Gregory W. Bond and Peter D. Lawrence       4         Merging Indiscriminable Diagnoses: An Approach Based on Automatic Domains Abstraction       4         matic Domains Abstraction       5         Pietro Torasso and Gianluca Torta       5         Structural Analysis Utilizing MSS Sets with Application to a Paper       6         Plant       6         Mattias Krysander and Mattias Nyberg       6         Diagnostic Reasoning with Multilevel Set-Covering Models       5         Joachim Baumeister and Dietmar Seipel       6         Computing Minimal Conflicts for Rich Constraint Languages       6         Jakob Mauss and Mugur Tatar       7         A Model Counting Characterization of Diagnoses       7         T.K. Satish Kumar       7         Computing Minimal Hitting Sets with Genetic Algorithm       7         Lin Li and Jiang Yunfei       7         Model-Based Diagnosis for Information Survivability       8         Howard Shrobe       7         Observations and Results Gained from the Jade Project       9         Wolfgang Mayer, Markus Stumptner, Dominik Wieland and Franz Wotawa       9         Hybrid Diagnosis with Unknown Behavioral Modes       9	Consistency-Based Fault Isolation for Uncertain Systems with Appli-	
Colin N. Jones, Gregory W. Bond and Peter D. Lawrence         Merging Indiscriminable Diagnoses: An Approach Based on Automatic Domains Abstraction         matic Domains Abstraction         Structural Analysis Utilizing MSS Sets with Application to a Paper         Plant         Mattias Krysander and Mattias Nyberg         Diagnostic Reasoning with Multilevel Set-Covering Models         Joachim Baumeister and Dietmar Seipel         Computing Minimal Conflicts for Rich Constraint Languages         Computing Minimal Conflicts for Rich Constraint Languages         Jakob Mauss and Mugur Tatar         A Model Counting Characterization of Diagnoses         T.K. Satish Kumar         Computing Minimal Hitting Sets with Genetic Algorithm         Lin Li and Jiang Yunfei         Model-Based Diagnosis for Information Survivability         Moward Shrobe         Observations and Results Gained from the Jade Project         Observations and Results Gained from the Jade Project         Wolfgang Mayer, Markus Stumptner,         Dominik Wieland and Franz Wotawa         Hybrid Diagnosis with Unknown Behavioral Modes	cations to Quantitative Dynamic Models	36
Merging Indiscriminable Diagnoses: An Approach Based on Automatic Domains Abstraction       4         Pietro Torasso and Gianluca Torta       5         Structural Analysis Utilizing MSS Sets with Application to a Paper       6         Plant       1       1         Mattias Krysander and Mattias Nyberg       7         Diagnostic Reasoning with Multilevel Set-Covering Models       5         Joachim Baumeister and Dietmar Seipel       6         Computing Minimal Conflicts for Rich Constraint Languages       6         Jakob Mauss and Mugur Tatar       7         A Model Counting Characterization of Diagnoses       7         T.K. Satish Kumar       7         Computing Minimal Hitting Sets with Genetic Algorithm       7         Lin Li and Jiang Yunfei       7         Model-Based Diagnosis for Information Survivability       8         Howard Shrobe       7         Observations and Results Gained from the Jade Project       9         Wolfgang Mayer, Markus Stumptner,       7         Dominik Wieland and Franz Wotawa       8         Hybrid Diagnosis with Unknown Behavioral Modes       9	Colin N. Jones, Gregory W. Bond and Peter D. Lawrence	
<ul> <li>matic Domains Abstraction</li></ul>	Merging Indiscriminable Diagnoses: An Approach Based on Auto-	
Pietro Torasso and Gianluca Torta         Structural Analysis Utilizing MSS Sets with Application to a Paper         Plant	matic Domains Abstraction	43
Structural Analysis Utilizing MSS Sets with Application to a Paper         Plant	Pietro Torasso and Gianluca Torta	
Plant       5         Mattias Krysander and Mattias Nyberg       5         Diagnostic Reasoning with Multilevel Set-Covering Models       5         Joachim Baumeister and Dietmar Seipel       6         Computing Minimal Conflicts for Rich Constraint Languages       6         Jakob Mauss and Mugur Tatar       7         A Model Counting Characterization of Diagnoses       7         T.K. Satish Kumar       7         Computing Minimal Hitting Sets with Genetic Algorithm       7         Lin Li and Jiang Yunfei       7         Model-Based Diagnosis for Information Survivability       8         Howard Shrobe       7         Observations and Results Gained from the Jade Project       9         Wolfgang Mayer, Markus Stumptner,       7         Dominik Wieland and Franz Wotawa       7         Hybrid Diagnosis with Unknown Behavioral Modes       7	Structural Analysis Utilizing MSS Sets with Application to a Paper	
Mattias Krysander and Mattias Nyberg         Diagnostic Reasoning with Multilevel Set-Covering Models       5         Joachim Baumeister and Dietmar Seipel       6         Computing Minimal Conflicts for Rich Constraint Languages       6         Jakob Mauss and Mugur Tatar       7         A Model Counting Characterization of Diagnoses       7         T.K. Satish Kumar       7         Computing Minimal Hitting Sets with Genetic Algorithm       7         Lin Li and Jiang Yunfei       7         Model-Based Diagnosis for Information Survivability       8         Howard Shrobe       7         Observations and Results Gained from the Jade Project       9         Wolfgang Mayer, Markus Stumptner, Dominik Wieland and Franz Wotawa       9         Hybrid Diagnosis with Unknown Behavioral Modes       9	Plant	51
Diagnostic Reasoning with Multilevel Set-Covering Models       5         Joachim Baumeister and Dietmar Seipel       6         Computing Minimal Conflicts for Rich Constraint Languages       6         Jakob Mauss and Mugur Tatar       7         A Model Counting Characterization of Diagnoses       7         T.K. Satish Kumar       7         Computing Minimal Hitting Sets with Genetic Algorithm       7         Lin Li and Jiang Yunfei       7         Model-Based Diagnosis for Information Survivability       8         Howard Shrobe       7         Observations and Results Gained from the Jade Project       7         Wolfgang Mayer, Markus Stumptner,       7         Dominik Wieland and Franz Wotawa       8         Hybrid Diagnosis with Unknown Behavioral Modes       7	Mattias Krysander and Mattias Nyberg	
Joachim Baumeister and Dietmar Seipel         Computing Minimal Conflicts for Rich Constraint Languages         Jakob Mauss and Mugur Tatar         A Model Counting Characterization of Diagnoses         T.K. Satish Kumar         Computing Minimal Hitting Sets with Genetic Algorithm         Lin Li and Jiang Yunfei         Model-Based Diagnosis for Information Survivability         Observations and Results Gained from the Jade Project         Wolfgang Mayer, Markus Stumptner,         Dominik Wieland and Franz Wotawa         Hybrid Diagnosis with Unknown Behavioral Modes	Diagnostic Reasoning with Multilevel Set-Covering Models	58
<ul> <li>Computing Minimal Conflicts for Rich Constraint Languages 6 Jakob Mauss and Mugur Tatar</li> <li>A Model Counting Characterization of Diagnoses</li></ul>	Joachim Baumeister and Dietmar Seipel	
Jakob Mauss and Mugur Tatar         A Model Counting Characterization of Diagnoses         T.K. Satish Kumar         Computing Minimal Hitting Sets with Genetic Algorithm         Lin Li and Jiang Yunfei         Model-Based Diagnosis for Information Survivability         Howard Shrobe         Observations and Results Gained from the Jade Project         Wolfgang Mayer, Markus Stumptner,         Dominik Wieland and Franz Wotawa         Hybrid Diagnosis with Unknown Behavioral Modes	Computing Minimal Conflicts for Rich Constraint Languages	65
<ul> <li>A Model Counting Characterization of Diagnoses</li></ul>	Jakob Mauss and Mugur Tatar	
T.K. Satish Kumar         Computing Minimal Hitting Sets with Genetic Algorithm       7         Lin Li and Jiang Yunfei         Model-Based Diagnosis for Information Survivability       8         Howard Shrobe         Observations and Results Gained from the Jade Project       9         Wolfgang Mayer, Markus Stumptner,       9         Dominik Wieland and Franz Wotawa       9         Hybrid Diagnosis with Unknown Behavioral Modes       9	A Model Counting Characterization of Diagnoses	70
<ul> <li>Computing Minimal Hitting Sets with Genetic Algorithm</li></ul>	T.K. Satish Kumar	
Lin Li and Jiang Yunfei Model-Based Diagnosis for Information Survivability	Computing Minimal Hitting Sets with Genetic Algorithm	77
Model-Based Diagnosis for Information Survivability       6         Howard Shrobe       6         Observations and Results Gained from the Jade Project       7         Wolfgang Mayer, Markus Stumptner,       6         Dominik Wieland and Franz Wotawa       6         Hybrid Diagnosis with Unknown Behavioral Modes       6	Lin Li and Jiang Yunfei	
Howard Shrobe         Observations and Results Gained from the Jade Project       9         Wolfgang Mayer, Markus Stumptner,         Dominik Wieland and Franz Wotawa         Hybrid Diagnosis with Unknown Behavioral Modes	Model-Based Diagnosis for Information Survivability	81
Observations and Results Gained from the Jade Project       9         Wolfgang Mayer, Markus Stumptner,       9         Dominik Wieland and Franz Wotawa       9         Hybrid Diagnosis with Unknown Behavioral Modes       9	Howard Shrobe	
Wolfgang Mayer, Markus Stumptner, Dominik Wieland and Franz Wotawa Hybrid Diagnosis with Unknown Behavioral Modes	Observations and Results Gained from the Jade Project	91
Dominik Wieland and Franz Wotawa Hybrid Diagnosis with Unknown Behavioral Modes	Wolfgang Mayer, Markus Stumptner,	
Hybrid Diagnosis with Unknown Behavioral Modes	Dominik Wieland and Franz Wotawa	
j	Hybrid Diagnosis with Unknown Behavioral Modes	97

Michael W. Hofbaur and Brian C. Williams	
State Tracking of Uncertain Hybrid Concurrent Systems	106
Emmanuel Benazera, Louise Travé-Massuyés and Phillippe Dague	
HCBFS: Combining Structure-Based and TMS-Based Approaches in	
Model-Based Diagnosis	115
T.K. Satish Kumar	
Possible Conflicts, ARRs, and Conflicts	122
Belarmino Pulido Junquera and Carlos Alonso González	
Model-Based Reliability and Diagnostic: A Common Framework for	
Reliability and Diagnostics	129
Berhard Anrig and Jürgen Kohlas	
Far-sighted diagnosis of active systems	137
Roberto Garatti, Gianfranco Lamperti and Marina Zanella	
Model-based Monitoring of Piecewise Continuous Behaviors using	
Dynamic Uncertainty Space Partitioning	146
Bernhard Rinner and Ulrich Weiss	
Object-Oriented Dynamic Bayesian Network-Templates for Modelling	
Mechatronic Systems	151
Harald Renninger and Hermann von Hasseln	
Development Tool for Distributed Monitoring and Diagnosis Systems	158
M. Albert, T. Längle and H. Wörn	
Using supervised learning techniques for diagnosis of dynamic sys-	
tems	165
Pedro J. Abad, Antonio J. Suárez, Rafael M. Gasca and J.A. Ortega	
Fault isolation using process algebra models	172
Dan Lawesson, Ulf Nilsson and Inger Klein	
Distributed Diagnosis of Networked, Embedded Systems	179
James Kurien, Xenofon Koutsoukos and Feng Zhao	

# Papers