

[PDF] Failure Diagnosis And Performance Monitoring

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Pau LF. - 1981

Failure Diagnosis and Performance Monitoring -
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inter- and intra-component
**System Failure Diagnosis
and Performance
Monitoring** - Edgardo P.
Rivera - 1983

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**Self-Adaptive Performance
Monitoring for Component-
Based Software Systems** -
Jens Ehlers - 2012

Effective monitoring of a software system's runtime behavior is necessary to evaluate the compliance of performance objectives. This thesis has emerged in the context of the Kieker framework addressing application performance monitoring. The contribution includes a self-adaptive performance monitoring approach allowing for dynamic adaptation of the monitoring coverage at runtime. The monitoring data includes performance measures such as throughput and response time statistics, the utilization of system resources, as well as the

control flow. Based on this data, performance anomaly scores are computed using time series analysis and clustering methods. The self-adaptive performance monitoring approach reduces the business-critical failure diagnosis time, as it saves time-consuming manual debugging activities. The approach and its underlying anomaly scores are extensively evaluated in lab experiments.

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Advances in Asset Management and Condition Monitoring -

Andrew Ball - 2020-08-27

This book gathers select contributions from the 32nd International Congress and Exhibition on Condition Monitoring and Diagnostic Engineering Management (COMADEM 2019), held at the University of Huddersfield, UK in

organized by the University of Huddersfield and COMADEM International. The aim of the Congress was to promote awareness of the rapidly emerging interdisciplinary areas of condition monitoring and diagnostic engineering management. The contents discuss the latest tools and techniques in the multidisciplinary field of performance monitoring, root cause failure modes analysis, failure diagnosis, prognosis, and proactive management of industrial systems. There is a special focus on digitally enabled asset management and covers several topics such as condition monitoring, maintenance, structural health monitoring, non-destructive testing and other allied areas. Bringing together expert contributions from academia and industry, this book will be a valuable resource for those interested in latest condition monitoring and asset management techniques.

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Human Detection and Diagnosis of System

Failures - Jens Rasmussen - 2013-03-13

This book includes all of the papers presented at the NATO Symposium on Human Detection and Diagnosis of System Failures held at Roskilde, Denmark on August 4-8, 1980. The Symposium was sponsored by the Scientific Affairs Division of NATO and the Rise National Laboratory of Denmark. The goal of the Symposium was to continue the tradition initiated by the NATO Symposium on Monitoring Behavior and Supervisory Control held in Berchtesgaden, F.R. Germany in 1976 and the NATO Symposium on Theory and Measurement of Mental Workload held in Mati, Greece in 1977. To this end, a group

Roskilde, Denmark on August engineers coming from industry, government, and academia convened to discuss, and to generate a "state-of-the-art" consensus of the problems and solutions associated with the human IS ability to cope with the increasing scale of consequences of failures within complex technical systems. The Introduction of this volume reviews their findings. The Symposium was organized to include brief formal presentations of papers sent to participants about two months in advance of the meeting, and considerable discussion both during plenary sessions and within more specialized workshops. Summaries of the discussions and workshop reports appear in this volume.

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Fault-Diagnosis Systems -

Rolf Isermann - 2006-01-16

With increasing demands for efficiency and product quality plus progress in the integration of automatic control systems in high-cost mechatronic and safety-critical processes, the field of supervision (or monitoring), fault detection and fault diagnosis plays an important role. The book gives an introduction into advanced methods of fault detection and diagnosis (FDD). After definitions of important terms, it considers the reliability, availability, safety and systems integrity of technical processes. Then fault-detection methods for single signals without models such as limit and trend checking and with harmonic and stochastic models, such as Fourier analysis, correlation

is followed by fault detection with process models using the relationships between signals such as parameter estimation, parity equations, observers and principal component analysis. The treated fault-diagnosis methods include classification methods from Bayes classification to neural networks with decision trees and inference methods from approximate reasoning with fuzzy logic to hybrid fuzzy-neuro systems. Several practical examples for fault detection and diagnosis of DC motor drives, a centrifugal pump, automotive suspension and tire demonstrate applications.

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Fault Diagnosis - Józef Korbicz - 2012-12-06

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NBS Special Publication - - 1968

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Tolerant Control - Mogens
Blanke - 2015-08-11

Fault-tolerant control aims at a gradual shutdown response in automated systems when faults occur. It satisfies the industrial demand for enhanced availability and safety, in contrast to traditional reactions to faults, which bring about sudden shutdowns and loss of availability. The book presents effective model-based analysis and design methods for fault diagnosis and fault-tolerant control. Architectural and structural models are used to analyse the propagation of the fault through the process, to test the fault detectability and to find the redundancies in the process that can be used to ensure fault tolerance. It also introduces design methods suitable for diagnostic systems and fault-tolerant controllers for continuous processes that are described by analytical models of discrete-event systems represented by automata. The book is suitable for engineering students, engineers in

wish to get an overview of the variety of approaches to process diagnosis and fault-tolerant control. The authors have extensive teaching experience with graduate and PhD students, as well as with industrial experts. Parts of this book have been used in courses for this audience. The authors give a comprehensive introduction to the main ideas of diagnosis and fault-tolerant control and present some of their most recent research achievements obtained together with their research groups in a close cooperation with European research projects. The third edition resulted from a major restructuring and re-writing of the former edition, which has been used for a decade by numerous research groups. New material includes distributed diagnosis of continuous and discrete-event systems, methods for reconfigurability analysis, and extensions of the structural methods towards fault-tolerant control. The bibliographical notes at the end of all chapters have been

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Diagnosis and Fault-Tolerant Control - Mogens Blanke - 2015-08-11

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Publications of the National Bureau of Standards Catalog - United States. National Bureau of Standards - 1975

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Publications of the National Institute of Standards and Technology Catalog - National Institute of Standards and Technology (U.S.) - 1980

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Mechanical Fault Diagnosis and condition monitoring - R. Collacott - 2012-12-06

Although the most sophisticated fault diagnosis and condition monitoring systems have their origin in the aerospace and nuclear energy industries, their use is by no means restricted to such areas of 'high technology'. Modern machinery in most industrial plants is now so complex and expensive that mechanics find it increasingly difficult to detect failure by, for instance, recognising changes in sound 'signatures', and few plants can afford the luxury of regular 'stripping down'. Increasingly, therefore, early-warning devices are being employed in an effort to prevent catastrophic

energy industries, their use provides the first co-ordinated compilation of fault diagnosis and condition monitoring devices. It proceeds in three logical steps. The early chapters deal with those conditions which contribute to deterioration and the consequent likely development of faults. The middle part of the book considers the various techniques of monitoring and discusses the criteria for their selection in different situations. The final chapters provide a guide to the interpretation of the information signals deriving from monitoring, relating to reliability science and the mathematics of probability, and thus providing decision data on which management can act.

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Fault Detection and Diagnosis in Engineering Systems - Janos Gertler - 2017-11-22

Featuring a model-based approach to fault detection and diagnosis in engineering systems, this book contains up-to-date, practical information on preventing product deterioration, performance degradation and major machinery damage.;College or university bookstores may order five or more copies at a special student price. Price is available upon request.

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Process Control System Fault Diagnosis - Ruben Gonzalez - 2016-09-06

Process Control System Fault Diagnosis: A Bayesian Approach Ruben T. Gonzalez, University of Alberta, Canada Fei Qi, Suncor Energy Inc., Canada Biao Huang, University of Alberta, Canada Data-driven Inferential Solutions for Control System Fault Diagnosis A typical modern process system consists of hundreds or even thousands of control loops, which are overwhelming for plant personnel to monitor. The main objectives of this book are to establish a new framework for control system fault diagnosis, to synthesize observations of different monitors with a prior knowledge, and to pinpoint possible abnormal sources on

examples, pilot-scale Process Control System Fault Diagnosis: A Bayesian Approach consolidates results developed by the authors, along with the fundamentals, and presents them in a systematic way. The book provides a comprehensive coverage of various Bayesian methods for control system fault diagnosis, along with a detailed tutorial. The book is useful for graduate students and researchers as a monograph and as a reference for state-of-the-art techniques in control system performance monitoring and fault diagnosis. Since several self-contained practical examples are included in the book, it also provides a place for practicing engineers to look for solutions to their daily monitoring and diagnosis problems. Key features:

- A comprehensive coverage of Bayesian Inference for control system fault diagnosis.
- Theory and applications are self-contained.
- Provides detailed algorithms and sample Matlab codes.
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Applications of Pattern Recognition - King-Sun Fu - 2019-07-22

This monograph is intended to cover several major applications of pattern recognition. After a brief introduction to pattern recognition in Chapter 1, the two major approaches, statistical approach and syntactic approach, are reviewed in Chapter 2, and 3, respectively. Other topics include the application of pattern recognition to seismic wave interpretation, to system reliability problems, to medical data analysis, as well as character and speech recognition.

Applications of Pattern Recognition - King-Sun Fu -

is vital. It is clear that fault diagnosis (including fault detection and isolation, FDI) has been becoming an important subject in modern control theory and practice. For example, the number of papers on FDI presented in many control-related conferences has been increasing steadily. The subject of fault detection and isolation continues to mature to an established field of research in control engineering. A large amount of knowledge on model-based fault diagnosis has been accumulated through the literature since the beginning of the 1970s. However, publications are scattered over many papers and a few edited books. Up to the end of 1997, there is no any book which presents the subject in an unified framework. The consequence of this is the lack of "common language", different researchers use different terminology. This problem has obstructed the progress of model-based FDI techniques and has been causing great concern in research community. Many

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Robust Model-Based Fault Diagnosis for Dynamic Systems - Jie Chen - 2012-12-06

There is an increasing demand for dynamic systems to become more safe and reliable. This requirement extends beyond the normally accepted safety-critical systems of nuclear reactors and aircraft where safety is paramount important, to systems such as autonomous vehicles and fast railways where the system availability

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Issues of Fault Diagnosis for Dynamic Systems

- Ron

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J. Patton - 2013-06-29

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Applications of Human Performance Models to System Design - Grant R. McMillan - 2013-06-29

The human factors profession is currently attempting to take a more proactive role in the design of man-machine systems than has been characteristic of its past. Realizing that human engineering contributions are needed well before the experimental evaluation of prototypes or operational systems, there is a concerted effort to develop tools that predict how humans will interact with proposed designs. This volume provides an overview of one category of such tools: mathematical models of human performance. It represents a collection of invited papers from a 1988 NATO Workshop. The Workshop was conceived and organized by NATO Research Study Group 9 (RSG.9) on "Modelling of

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System Fault Diagnostics, Reliability and Related Knowledge-Based Approaches - S.G. Tzafestas - 2012-12-06

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Process Plant Instrumentation - Miguel J. Bagajewicz - 2000-11-27
This is the first in-depth presentation in book form of current analytical methods for optimal design, selection and evaluation of instrumentation for process plants. The presentation is clear, concise and systematic-providing process engineers with a valuable tool for improving quality, costs, safety, loss

accounting. From Chapter 1 Introduction "Instrumentation is needed in process plants to obtain data that are essential to perform several activities. Among the most important are control, the assessment of the quality of products, production accounting and the detection of failures related to safety. In addition, certain parameters than cannot be measured directly, such as heat exchanger, fouling or column deficiencies, are of interest. Finally, new techniques, such as on-line optimization, require the construction of reliable computer models for which the estimation of process parameters is essential. "This book concentrates on the tasks of determining the optimal set of measured variables and selecting the accuracy and reliability of the corresponding instruments. The goal is to obtain sufficiency accurate and reliable estimates of variables of interest while filtering bad data due to possible instrument malfunction. An

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minimized. These properties, among others are variable observability, system reliability and precision of certain variables. "This book is not a textbook. Rather it is intended to be an organized collection of the most relevant work in this area. It has been written with the intention of making it readable by engineers with some background in linear algebra, mathematical optimization and graph theory. It is organized so that the complexity of the sensor network design is addressed step by step." The information in this new book serves the needs of chemical and other process engineers involved in instrumentation and control, maintenance, plant operations, process design, process development, quality control, safety, and loss prevention. Illustrations and Tables The text is supplemented with more than 100 flow charts, diagrams and other schematics that illustrate procedures, systems and instrumentation. More than 70 tables provide useful

This is the first in-depth Dr. Miguel J. Bagajewicz brings to this new book his extensive experience in design, data management, teaching and writing in the area of process engineering. He received his M.S. and Ph.D. in Chemical Engineering from the California Institute of Technology. He is presently Associate Professor, School of Chemical Engineering and Materials Science, and Director, Center for Engineering Optimization at the University of Oklahoma. He is the author or co-author of more than 100 journal articles, conference presentations, and reports, and the author of articles on data reconciliation and sensor location in the Instrument Engineers' Handbook, fourth edition. He is a member of the American Institute of Chemical Engineers (AIChE), and on the executive committee of the Central Oklahoma Chapter.

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Engineers' Handbook, fourth process development, quality control, safety, and loss prevention. Illustrations and Tables The text is supplemented with more than 100 flow charts, diagrams and other schematics that illustrate procedures, systems and instrumentation. More than 70 tables provide useful reference data. The Author Dr. Miguel J. Bagajewicz brings to this new book his extensive experience in design, data management, teaching and writing in the area of process engineering. He received his M.S. and Ph.D. in Chemical Engineering from the California Institute of Technology. He is presently Associate Professor, School of Chemical Engineering and Materials Science, and Director, Center for Engineering Optimization at the University of Oklahoma. He is the author or co-author of more than 100 journal articles, conference presentations, and reports, and the author of articles on data reconciliation and sensor location in the Instrument

edition. He is a member of the American Institute of Chemical Engineers (AIChE), and on the executive committee of the Central Oklahoma Chapter.

Engineering Risk and Hazard Assessment -

Abraham Kandel - 2018-01-31

The volumes deal with the newly emerging field of Risk and Hazard Assessment and its application to science and engineering. These volumes deal with issues such as short- and long-term hazards, setting priorities in safety, fault analysis for process plants, hazard identification and safety assessment of human- robot systems, plant fault diagnoses expert systems, knowledge based diagnostic systems, fault tree analysis, modelling of computer security systems for risk and reliability analysis, risk analysis of fatigue failure, fault evaluation of complex system, probabilistic risk analysis, and expert systems for fault detection. This volume will provide the reader not only with valuable

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Information Systems:

Failure Analysis - John A. Wise - 2012-12-06

Although system analysis is a well established methodology, the specific application of such analysis to information systems is a relatively new endeavor. Indeed, it may be said to be still in the trial-and-error stage. In recent years, such analysis has been given impetus by the numerous accounts of information system failures, some of which have led to serious consequences -e.g., the accident at Three Mile Island, the chemical spills at Bophal, India, and at Institute, West Virginia, and the loss of the space shuttle Challenger. Analysis of the failure of the W. T. Grant Company, the third largest retail organization in the United States, indicated that improper use of the available information was a significant factor in that failure. In spite of these incidents and their widespread impact, only

system failures, some of made to develop an effective methodology for analyzing the information systems involved in such incidents. There have been no well developed guidelines for determining the causes of such events and for recommending solutions so that similar failures could be avoided. To address the need for such a methodology, the North Atlantic Treaty Organization (NATO) sponsored an Advanced Research Workshop attended by a group of 32 scientists, scholars, and expert investigators, representing a variety of disciplines and countries.

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Hybrid Artificial Intelligent Systems, Part I - Manuel

Grana Romay - 2010-06-11

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Distributed Computer Control Systems in Industrial Automation -

Dobrivojie Popovic -

1990-03-30

A reference guide for professionals or text for graduate and postgraduate students, this volume emphasizes practical designs

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Production And Operations Management - Chary -

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Energy Research Abstracts
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**Mechanical Fault
Diagnosis and condition
monitoring** - R. Collacott -
1977-03-24

Although the most sophisticated fault diagnosis and condition monitoring systems have their origin in the aerospace and nuclear energy industries, their use is by no means restricted to such areas of 'high technology'. Modern machinery in most industrial plants is now so complex and expensive that mechanics find it increasingly difficult to detect failure by, for instance, recognising changes in sound 'signatures', and few plants can afford the luxury of regular 'stripping down'. Increasingly, therefore, early-warning devices are being employed in an effort to prevent catastrophic breakdown. This book provides the first co-ordinated compilation of fault diagnosis and condition monitoring devices. It proceeds in three logical steps. The early chapters deal with those conditions which contribute to

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Techniques and

Applications - Cornelius T. Leondes - 2000-08-08

The technical committee on mechatronics formed by the International Federation for the Theory of Machines and Mechanisms, in Prague, Czech Republic, adopted the following definition for the term: Mechatronics is the Synergistic combination of precision mechanical engineering, electronic control and systems thinking in the design products and manufacturing process. Recent developments in computer engineering, including the exponential improvements in microprocessors, Application Specific Integrated Circuits (ASICs), along with advances in computational techniques and advances and the product design process, has led to the field of mechatronics evolving as a highly powerful and most cost effective means for product realization. This volume focuses on mechatronics in transportation and vehicular systems and clearly reveals

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Bond Graphs for Modelling, Control and Fault Diagnosis of Engineering Systems -

Wolfgang Borutzky - 2016-12-31

This book presents theory and latest application work in Bond Graph methodology with a focus on: • Hybrid dynamical system models, • Model-based fault diagnosis, model-based fault tolerant control, fault prognosis • and also addresses • Open thermodynamic systems with compressible fluid flow, • Distributed parameter models of mechanical subsystems. In addition, the book covers various applications of current interest ranging from

latest application work in surgery robots, walking machines to wind-turbines. The up-to-date presentation has been made possible by experts who are active members of the worldwide bond graph modelling community. This book is the completely revised 2nd edition of the 2011 Springer compilation text titled Bond Graph Modelling of Engineering Systems - Theory, Applications and Software Support. It extends the presentation of theory and applications of graph methodology by new developments and latest research results. Like the first edition, this book addresses readers in academia as well as practitioners in industry and invites experts in related fields to consider the potential and the state-of-the-art of bond graph modelling.

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An Optimal Diagnostic Strategy for Finding Malfunctioning Components in Systems -

James T. Wong - 1983

It is often difficult and time consuming, if not computationally impossible, to locate a failed component in a large complex system. Recently, the U.S. Army Research and Technology Laboratories at Moffett Field, California, have established a theory stating that the minimum number of test points required for conclusive detection of system failure is equal to the total number of terminal test points; this set of points constitutes the optimal choice. In this report the authors have developed an optimal diagnostic strategy for finding a failed component in a malfunctioning system.

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Data-driven Methods for Fault Localization in Process Technology -

Kuehnert, Christian -
2013-10-24

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The 1994 Goddard Conference on Space Applications of Artificial Intelligence - Carl F. Hostetter - 1994

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Stationary and Non-stationary Process Condition Monitoring and Fault Diagnosis and Its Application to Drilling Processes - Shuxin Gu - 1997

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Autonomous and Autonomic Systems: With Applications to NASA Intelligent Spacecraft Operations and Exploration Systems - Walt Truskowski - 2009-11-12
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started researching and developing autonomous and autonomic ground and spacecraft control systems for future NASA missions. This research started by experimenting with and developing expert systems to automate ground station software and reduce the number of people needed to control a spacecraft. This was followed by research into agent-based technology to develop autonomous ground control and spacecraft. Research into this area has now evolved into using the concepts of autonomic systems to make future space missions self-managing and giving them a high degree of survivability in the harsh environments in which they operate. This book describes much of the results of this research. In addition, it aims to discuss the needed software to make future NASA space missions more completely autonomous and autonomic. The core of the software for these new missions has been written for other applications or is being applied gradually

research started by current development. It is intended that this book should document how NASA missions are becoming more autonomous and autonomic and should point to the way of making future missions highly - tonomous and autonomic. What is not covered is the supporting hardware of these missions or the intricate software that implements orbit and at- tude determination, on-board resource allocation, or planning and scheduling (though we refer to these technologies and give references for the interested reader).

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Production and Operations Management, 6e - S N

Chary - 2019-04-10

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Asset Intelligence through Integration and

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Contemporary Vibration Engineering Technologies -

Joseph Mathew - 2018-11-11

These proceedings include a collection of papers on a range of topics presented at the 12th World Congress on Engineering Asset Management (WCEAM) in Brisbane, 2 - 4 August 2017. Effective strategies are required for managing complex engineering assets such as built environments, infrastructure, plants, equipment, hardware systems and components. Following the release of the ISO 5500x set of standards in 2014, the 12th WCEAM addressed important issues covering all aspects of engineering asset management across various sectors including health. The topics discussed by the congress delegates are grouped into a number of tracks, including strategies for investment and divestment of assets, operations and maintenance of assets, assessment of assets' health conditions, risk and vulnerability, technologies, and systems for management

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Computer Performance Engineering - Maria

Simonetta Balsamo -
2013-08-19

This book constitutes the refereed post-proceedings of the 10th European Performance Engineering Workshop, EPEW 2013, held in Venice, Italy, in September 2013. The 16 regular papers presented together with 8 short papers and 2 invited talks were carefully reviewed and selected from 33 submissions. The Workshop aims to gather academic and industrial researchers working on all aspects of performance engineering. Original papers related to theoretical and methodological issues as well as case studies and automated tool support are solicited in the following areas:

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