



Communications in Computer and Information Science

2615

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Gabriele Kotsis · A Min Tjoa · Ismail Khalil
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Database and Expert Systems Applications - DEXA 2025 Workshops

AISys and AI4IP
Bangkok, Thailand, August 25–27, 2025
Proceedings

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Preface

Welcome to the Proceedings of the DEXA 2025 Workshops. This year, we hosted two workshops: the 5th International Workshop on AI System Engineering: Math, Modelling and Software (AISys 2025) and the 1st International Workshop on Optimisation of Industrial Production with AI Algorithms (AI4IP). These events took place from August 25–27, 2025 in Bangkok, Thailand.

This compilation of papers and presentations represents a convergence of cutting-edge research, interdisciplinary collaboration, industrial application of algorithms and methods, and innovative solutions at the forefront of science and technology.

AISys 2025 focused on the foundational aspects of trustworthy AI systems. The workshop brought together scientists from artificial intelligence, systems engineering, applied mathematics, and software architecture to explore the foundational and practical challenges of building robust, scalable, and trustworthy AI systems. This workshop also addressed the ethical dimensions of AI systems, with particular attention to compliance challenges arising from emerging regulatory frameworks such as the European AI Act. The contributions presented in this workshop explore key issues including the trustworthiness of AI systems, risk mitigation strategies for large language model (LLM) outputs, and the algorithmic and architectural challenges encountered in the development and deployment of complex AI systems. Together, these papers provide valuable insights into the intersection of ethical principles, regulatory demands, and technical implementation.

AI4IP 2025 was initiated by a group of scientists working in the very fast-growing field of AI algorithms applied to manufacturing processes. Today's production lines and assembly workflows are characterized by complex interdependencies and a high degree of automation. Each step in the process is capable of generating substantial volumes of data, thanks to the widespread use of advanced sensor technologies. Leveraging this data through intelligent algorithms is central to the realization of smart, adaptive, and efficient production systems. The contributions presented in this workshop address the design and application of effective optimization algorithms for assembly processes, the acquisition and interpretation of sensor data, and the use of intelligent methods to analyze complex production information in modern smart manufacturing environments. Key themes addressed by these papers include data acquisition strategies, algorithmic efficiency, real-time decision-making, and the integration of AI into existing production infrastructures. The goal is not only to enhance productivity and quality but also to support more flexible, sustainable, and resilient manufacturing systems. In addition to addressing algorithmic and data science challenges, also practical experiences in the design and implementation of robotic systems are shown, highlighting the interplay between AI algorithms and physical automation in real-world industrial settings. A common theme across all accepted papers is a strong emphasis on practical implementation and measurable benefits in addressing today's key challenges in industrial production.

The two workshops attracted 23 submissions, from which only 11 papers were accepted after a rigorous peer-review process, ensuring the highest standards of quality and relevance to the DEXA theme.

We extend our deepest gratitude to the authors, reviewers, and organizers whose dedication and expertise made these workshops possible. Their collective efforts ensured that the knowledge shared here is of the highest quality and relevance.

As you engage with these proceedings, we hope you find inspiration, fresh ideas, and valuable insights that will enrich your work and contribute meaningfully to the ongoing advancement of this dynamic and impactful field.

August 2025

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Contents

AI System Engineering: Math, Modelling and Software

Exploring the Benefits of Iterative Retrieval-Augmented Generation for Risk Mitigation in LLM Responses	3
<i>Jonas Kubesch, Elmar Kiesling, Fajar J. Ekaputra, Umutcan Serles, Ioan Toma, and Clemens Havas</i>	

TrustAI: Designing and Implementing a Trustworthy and User-Centered AI Platform	15
<i>Djordje Slijepčević, Lukas Daniel Klausner, Oliver Eigner, Sara Ladner, Tobias Kietreiber, Yulia Belinskaya, Fabian Kovac, Torsten Priebe, Peter Judmaier, Michael Litschka, and Matthias Zeppelzauer</i>	

Collaborative Trustworthy Foundation Model Framework: An Environmental Sustainability Use-Case to Detect Contamination Objects in Organic Waste Streams	30
<i>Alexander Valentinitisch, Batuhan Bencik, Mathias Brucker, Gregor Lammer, Cornelia Adami, Mohit Kumar, Lukas Fischer, and Florian Kromp</i>	

Optimisation of Industrial Production with AI Algorithms

Efficient Federated Learning Integration into Existing MLOps Pipelines via Centralized Model Management	47
<i>Tatjana Krau, Florian Huber, Teena Chirakal, Tobias Ricken, Bernd Lüdemann-Ravit, and Frieder Heieck</i>	

Deep Photometric Stereo for Tool Wear Inspection	57
<i>Thomas Jäkel and Frank Schirmeier</i>	

Multi-objective Reinforcement Learning for Energy-Efficient Industrial Control	67
<i>Georg Schäfer, Raphael Seliger, Jakob Rehrl, Stefan Huber, and Simon Hirlaender</i>	

Deep Learning-Based Defect Detection in Laser Powder Bed Fusion	73
<i>Cindy Buhl, Faiza Waheed, and Ulrich Göhner</i>	

Prediction of CNC Manufacturing Time Under Real-World Conditions Using Graph Convolutional Networks	79
<i>Fabio Lischka, Andreas Schwarz, Dominik Wiesner, Christoph Wald, Frank Schirmeier, and Ulrich Göhner</i>	
A Vision-Guided Approach to Pick-and-Place Robotics: From Assembly Drawings to Industrial Assembly Automation	87
<i>Raphael Seliger, Matthias Micheler, Sebnem Gül-Ficici, and Ulrich Göhner</i>	
Towards Real-Time Tool Wear Detection on Edge Devices: A Lightweight Dimensionality Reduction Approach for Spindle Integrated Cutting Force Sensor Data	95
<i>Sebastian Unsin, Benedikt Müller, Thomas Jäkel, and Frank Schirmeier</i>	
Energy Optimized Piecewise Polynomial Approximation Utilizing Modern Machine Learning Optimizers	110
<i>Hannes Waclawek and Stefan Huber</i>	
Author Index	115