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Environment with MetaModeling, Interoperability, and Parallel Execution -- Simulation -- Blender for Robotics: Integration into the Leuven Paradigm for Robot Task Specification and Human Motion Estimation -- Simulating the C2SM 'Fast' Robot -- Extending Open Dynamics Engine for Robotics Simulation -- Virtual Robot Experimentation Platform V-REP: A Versatile 3D Robot Simulator -- Evaluation and Enhancement of Common Simulation Methods for Robotic Range Sensors -- High Fidelity Sensor Simulations for the Virtual Autonomous Navigation Environment -- GPS/Galileo Testbed Using a High Precision Optical Positioning System -- Validating Vision and Robotic Algorithms for Dynamic Real World Environments -- OpenGRASP: A Toolkit for Robot Grasping Simulation -- NERD Neurodynamics and Evolutionary Robotics Development Kit -- Simulation and Evaluation of Mixed-Mode Environments: Towards Higher Quality of Simulations -- Evaluating a Physics Engine as an Ingredient for Physical Reasoning -- Simulating Vehicle Kinematics with SimVis3D and Newton -- Programming -- Coordinating Software Components in a Component-Based Architecture for Robotics -- Native Robot Software Framework Inter-operation -- Run-Time Management of Component-Based Robot Software from a Command Line -- Modelling Behaviour Requirements for Automatic Interpretation, Simulation and Deployment -- Implementing Automated Robot Task Planning and Execution Based on Description Logic KB -- On the Way to High-Level Programming for Resource-Limited Embedded Systems with Golog -- RobustHX - The Robust Middleware Library for Hexor Robots -- RoboComp: A Tool-Based Robotics Framework -- Improving a Robotics Framework with Real-Time and High-Performance Features -- Implementation of Distributed Production System for Heterogeneous Multiprocessor Robotic Systems -- Robot Programming by Demonstration -- Design Principles of the Component-Based Robot Software Framework Fawkes -- Handling Hardware Heterogeneity through Rich Interfaces in a Component Model for Autonomous Robotics -- Design Abstraction and Processes in Robotics: From Code-Driven to Model-Driven Engineering -- Applications -- Using Simulation to Assess the Effectiveness of Pallet Stacking Methods -- Analysing Mixed Reality Simulation for Industrial Applications: A Case Study in the Development of a Robotic Screw Remover System -- A Parameterless Biologically Inspired Control Algorithm Robust to Nonlinearities, Dead-Times and Low-Pass Filtering Effects -- Exploration Strategies for a Robot with a Continuously Rotating 3D Scanner -- Validating an Active Stereo System Using USARSim -- Performance Analysis for Multi-robot Exploration Strategies -- Dynamic Modeling of the 4 DoF BioRob Series Elastic Robot Arm for Simulation and Control -- Static Balance for Rescue Robot Navigation: Discretizing Rotational Motion within Random Step Environment -- Discovery, Localization and Recognition of Smart Objects by a Mobile Robot -- Simulation for the Optimal Design of a Biped Robot: Analysis of Energy Consumption -- Efficient Use of 3D Environment Models for Mobile Robot Simulation and Localization -- Decision and Coordination Strategies for RoboCup Rescue Agents -- Swarm Dispersion via Potential Fields, Leader Election, and Counting Hops -- Compliant Robot Actuation by Feedforward Controlled Emulated Spring Stiffness -- Different Approaches in Feeding of a Flexible Manufacturing Cell -- On the Stability of Bipedal Walking -- An Approach to Close the Gap between Simulation and Real Robots -- Accelerating Point-Based POMDP Algorithms via Greedy Strategies.

| Sommario/riassunto | Why are the many highly capable autonomous robots that have been promised for novel applications driven by society, industry, and research not available - day despite the tremendous progress in |

robotics science and systems achieved during the last decades? Unfortunately, steady improvements in specific robot abilities and robot hardware have not been matched by corresponding robot performance in real world environments. This is mainly due to the lack of advancements in robot software that master the development of robotic systems of ever increasing complexity. In addition, fundamental open problems are still awaiting sound answers while the development of new robotics applications s- fersfromthelackofwidelyusedtools, libraries,andalgorithmsthataredesigned in a modular and performant manner with standardized interfaces. Simulation environments are playing a major role not only in reducing development time and cost, e. g. , by systematic software- or hardware-in-the-loop testing of robot performance, but also in exploring new types of robots and applications. H- ever, their use may still be regarded with skepticism. Seamless migration of code using robot simulators to real-world systems is still a rare circumstance, due to the complexity of robot, world, sensor, and actuator modeling. These challenges drive the quest for the next generation of methodologies and tools for robot development. The objective of the International Conference on Simulation, Modeling, and Programming for Autonomous Robots (SIMPAR) is to offer a unique forum for these topics and to bring together researchers from academia and industry to identify and solve the key issues necessary to ease the development of increasingly complex robot software.