**SODALITE Project**

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| **Task** | **Topics for Papers/ Model Papers** |
| **Analytics and Semantic Decision Support** | |
| A taxonomy of typical infrastructure defects and bugs  Machine-learning and search-based  software engineering techniques to define transparent defect-prediction mechanisms (on-the-fly infrastructure testing and operations management before deployment)  Infrastructure code quality framework (find and experiment with software quality metrics) | **Closely related works (North Carolina State University)**  Categorizing Defects in Infrastructure as Code (Pre-print)  Characteristics of Defective Infrastructure as Code Scripts in DevOps (https://akondrahman.github.io/papers/icse18\_ds.pdf)  Defect prediction metrics for infrastructure as code scripts in DevOps (ICSE Companion)  **Machine-learning, metrics, search-based techniques**  On Fault Detection and Diagnosis in Robotic Systems (ACM Surveys - 2018)  Evaluating different families of prediction methods for estimating software project outcomes (JSS)  Which type of metrics are useful to deal with class imbalance in software defect prediction? (Information and Software Technology)  Evaluating defect prediction approaches: a benchmark and an extensive comparison (Empirical Software Engineering)  Design evolution metrics for defect prediction in object oriented systems (Empirical Software Engineering)  Metric-based software reliability prediction approach and its application (Empirical Software Engineering)  An empirical study on software defect prediction with a simplified metric set (Information and Software Technology)  Empirical validation of object-oriented metrics on open source software for fault prediction (TSE)  ConPredictor: Concurrency Defect Prediction in Real-World Applicationsn (TSE)  Toward a Smell-aware Bug Prediction Model (TSE)  Benchmarking Classification Models for Software Defect Prediction: A Proposed Framework and Novel Findings (TSE)  Which type of metrics are useful to deal with class imbalance in software defect prediction? (Information and Software Technology)  **Knowledge-based approach**  Predictive diagnosis based on a fleet-wide ontology approach (Knowledge-Based Systems)  RDR-based knowledge based system to the failure detection in industrial cyber physical systems (Knowledge-Based Systems)  More papers ...  **Online/runtime IaC defect prediction**  Online Defect Prediction for Imbalanced Data (ICSE)  MULTI: Multi-objective effort-aware just-in-time software defect prediction (Information and Software Technology)  TLEL: A two-layer ensemble learning approach for just-in-time defect prediction (Information and Software Technology)  Context-aware statistical debugging: from bug predictors to faulty control flow paths (ICSE)  Automatically Learning Semantic Features for Defect Prediction (ICSE)  On the Multiple Sources and Privacy Preservation Issues for Heterogeneous Defect Prediction (TSE) |
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| Rule-based semantic reasoning  techniques for context-aware search and discovery, matchmaking and reuse of cloud applications and  Infrastructures. | Ontology-based annotation and retrieval of services in the cloud (Knowledge-Based Systems)  Ontology-based methodology for e-service discovery (Information Systems)  A knowledge-based resource discovery for Internet of Things(Knowledge-Based Systems)  Resource discovery for distributed computing systems: A comprehensive survey (J. Parallel Distrib. Comput.)  Efficient cloud service discovery approach based on LDA topic modeling (JSS)  A semantic recommendation algorithm for the PaaSport platform-as-a-service marketplace (Expert Systems with Applications)  Semantic-based automatic service composition with functional and nonfunctional requirements in design time: A genetic algorithm approach (Information and Software Technology)  Aggregated search of data and services (Information Services)  Semantic based aspect-oriented programming for context-aware Web service composition (Information Systems)  Service Operator-Aware Trust Scheme for Resource Matchmaking across Multiple Clouds (IEEE Transactions on Parallel and Distributed Systems)  Machine Learning in the Internet of Things: a Semantic-enhanced Approach (Semantic Web journal)  PaaSport semantic model: An ontology for a platform-as-a-service semantically interoperable marketplace (Data & Knowledge Engineering)  A case-based reasoning approach to reuse quality-driven designs in service-oriented architectures  (Information Systems)  A framework to support selection of cloud providers based on security and privacy requirements (JSS) |
| **Predictive Deployment Refactoring** | |
| Structural decomposition and pattern-based re-architecting of runtime infrastructures based on available and substitutable nodes (machine-learned alternatives)  Criteria for evaluating alternatives (a) improved privacy; (GDPR) (b) improved security; (c) reduced overprovisioning | Modelling and reasoning about security requirements in socio-technical systems (Data & Knowledge Engineering)  Formal enforcement and management of obligation policies (Data & Knowledge Engineering)  Design Rule Spaces: A New Model for Representing and Analyzing Software Architecture (TSE)  Modeling and enforcing secure object flows in process-driven SOAs: an integrated model-driven approach (Software & Systems Modeling)  A framework to support alignment of secure software engineering with legal regulations (Software & Systems Modeling)  A model-driven approach for vulnerability evaluation of modern physical protection systems (Software & Systems Modeling)  A model-integrated authoring environment for privacy policies (Science of Computer Programming)  Modeling Security and Privacy Requirements: a Use Case-Driven Approach (Information and Software Technology)  Precluding incongruous behavior by aligning software requirements with security and privacy policies (Information and Software Technology)  Mosco: a privacy-aware middleware for mobile social computing (JSS)  A semantic approach for designing Assistive Software Recommender systems (JSS)  Understanding the impact of cloud patterns on performance and energy consumption (JSS)  Engineering Security Vulnerability Prevention, Detection, and Response (IEEE Software)  Pattern-based multi-cloud architecture migration (SPE)  Supporting pattern-based dependability engineering via model-driven development: Approach, tool-support and empirical validation (JSS)  Quality attribute tradeoff through adaptive architectures at runtime (JSS)  Cloud architecture continuity: Change models and change rules for sustainable cloud software architectures  Performance-driven software model refactoring (Information and Software Technology)  Automating feature model refactoring: *A Model transformation approach* (Information and Software Technology)  Automatic Software Refactoring via Weighted Clustering in Method-Level Networks (TSE)  Resource Optimization Across the Cloud Stack (IEEE Transactions on Parallel and Distributed Systems)  Modeling data protection vulnerabilities of cloud systems using risk patterns (System Analysis and Modeling Conference )  Designing secure business processes with SecBPMN (Software & Systems Modeling)  A security-aware metamodel for multi-agent systems (Information and Software Technology)  Security towards the edge: Sticky policy enforcement for networked smart objects (Information Systems)  Architecture-based regulatory compliance argumentation (JSS)  Extending the UML Statecharts Notation to Model Security Aspects (TSE)  Security modeling for service-oriented systems using security pattern refinement approach (Software & Systems Modeling)  Optimized Cloud Deployment of Multi-tenant Software Considering Data Protection Concerns (CCGrid)  EARMO: An Energy-Aware Refactoring Approach for Mobile Apps (TSE)  A systematic review on search-based refactoring (Information and Software Technology)  A model-driven approach to catch performance antipatterns in ADL specifications (Information and Software Technology)  A methodology to assess the impact of design patterns on software quality (Information and Software Technology)  Knowledge based quality-driven architecture design and evaluation (Information and Software Technology)  A framework for semi-automated co-evolution of security knowledge and system models (JSS)  Effective detection of android malware based on the usage of data flow APIs and machine learning (Information and Software Technology)  Diversification and obfuscation techniques for software security: A systematic literature review (Information and Software Technology)  Compliance in service-oriented architectures: A model-driven and view-based approach (Information and Software Technology)  Privacy-Aware Scheduling SaaS in High Performance Computing Environments (EEE Transactions on Parallel and Distributed Systems)  Enhancing the Description-to-Behavior Fidelity in Android Apps with Privacy Policy (TSE)  Analyzing Regulatory Rules for Privacy and Security Requirements  (TSE)  Automated verification of security pattern compositions (Information and Software Technology)  ASE: A comprehensive pattern-driven security methodology for distributed systems (Computer Standards & Interfaces)  A comprehensive pattern-oriented approach to engineering security methodologies (Information and Software Technology)  A model-driven approach for vulnerability evaluation of modern physical protection systems (Software & Systems Modeling)  Design notations for secure software: a systematic literature review (Software & Systems Modeling)  A graph mining approach for detecting identical design structures in object-oriented design models(Science of Computer Programming)  A comprehensive approach to privacy in the cloud-based Internet of Things (Future Generation Computer Systems)  Applying design patterns in the search-based optimization of software product line architectures (Software & Systems Modeling)  Design pattern-based model transformation supported by QVT (JSS) |
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