# Exploitable Results by Third Parties

ITEA3 14035 Reflexion

React to Effects Fast by Learning, Evaluation, and eXtracted InformatiON

Project details

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| Name: Simulation-driven Machine Learning | | | | |
| Input(s): | | Main feature(s) | Output(s): | |
| * Mechatronic system with too little or no data to do data science or machine learning. | | * Data synthesis through simulation * Connection of simulation environment, simulation driver and data science platform. | * ML model | |
| Unique Selling Proposition(s): | * Data is generated rather than collected, therefore the data can exist before the mechatronic system is realized. * For condition monitoring it is expensive and also not intended to collect data of all conditions, especially the failure ones. The methods allow data generation in this critical area. * Knowledge of the engineer is going into the generation of the data. Therefore, prior knowledge/generalization is already added which makes validation over several data sets more successful. See: C. Sobie, C. Freitas, and M. Nicolai (2017) *Simulation-driven machine learning: Bearing fault classification*. Mechanical Systems and Signal Processing | | |
| Integration constraint(s): | * JupyterLab * Simcenter Amesim | | |
| Intended user(s): | * Engineers, * Researcher * Data Scientists | | |
| Provider: | * Siemens Industry Software NV | | |
| Contact point: | * Mike Nicolai - Mike.Nicolai@siemens.com | | |
| Condition(s) for reuse: | * License and/or Service Project | | |
|  | *Latest update: 2018-10-25* | | |

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| Name: Unsupervised Learning Document Processing Pipeline | | | | |
| Input(s): | | Main feature(s) | Output(s): | |
| * A large number of digital documents (DOC, PDF, etc.) * Additional Structural data relating to those documents | | * Automatic parsing and extraction of Text and Paragraphs * Document Clustering to help quickly sift through large numbers of documents without reading them all | * Document Map with 2D similarity * Paragraph Map with topical zones | |
| Unique Selling Proposition(s): | * Quickly scan and index complex document collections without pre-sorting or tagging the data. * Does not require set up of ontologies to get started * Speeds up know-your-customer tasks | | |
| Integration constraint(s): | * Requires a microservice based infrastructure (Docker) * Benefits from a visualization layer to analyze the embedding results | | |
| Intended user(s): | * Compliance officers, Document analysts, Insurance and Finance subject matter experts, Controllers | | |
| Provider: | * SynerScope | | |
| Contact point: | * Jan-Kees.Buenen@synerscope.com | | |
| Condition(s) for reuse: | * Commercial license is available | | |
|  | *Latest update: 2018-10-17* | | |

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| Name: Human-machine Framework for System Verification Testing based on Log File Classification | | | | |
| Input(s): | | Main feature(s) | Output(s): | |
| * Log files of system usage actions (text / keywords) | | * Partitioning of log files into clusters based on similarity * Categorization of clusters into user-defined labels, e.g. “normal/exceptional behaviour” * Classification of log files in accordance with the user-defined labels * Web-browser interface to allow experts communicate with the machine learning algorithms * Expert feedback to update existing models. | * Usage clusters * Usage models (probability graphs) * Labelled logs | |
| Unique Selling Proposition(s): | * Automatic retrieval of usage types from data * Provides insights in normal / exceptional system behavior * Mechanism in place for the expert in the loop via web-browser interface * Continuously adapts to represent current usage types | | |
| Integration constraint(s): | * Python 3.6 * Flask 1.0.2 * React 16.5.2 | | |
| Intended user(s): | * System and Test Designers | | |
| Provider: | * Embedded Systems Innovation by TNO (ESI)   [www.esi.nl](http://www.esi.nl) | | |
| Contact point: | * Bas Huijbrechts – bas.huijbrechts@tno.nl | | |
| Condition(s) for reuse: | * Free to use | | |
|  | *Latest update: 2018-10-18* | | |

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| Name: Semantic Graph Extraction from Relevant Domain Knowledge Documentation | | | | |
| Input(s): | | Main feature(s) | Output(s): | |
| * Dataset of domain specific documents | | * Document classification into relevant/not relevant * Semantic graph construction | * Labelled documents into relevant/not relevant * Semantic graphs | |
| Unique Selling Proposition(s): | * User-assisted classification of documents * Continuous adaptation of classifier to represent relevant/not relevant documents * Automatic construction of semantic graphs from documentation | | |
| Integration constraint(s): | * Python 3.6 * Gensim’s doc2vec library * Sci-kit learn library * Standford CoreNLP 3.9.1 * hearst\_patterns\_python * Neo4j 3.5 * ImageMagick 7.0 | | |
| Intended user(s): | * Domain experts of high-tech industries | | |
| Provider: | * Embedded Systems Innovation by TNO (ESI)   [www.esi.nl](http://www.esi.nl) | | |
| Contact point: | * Bas Huijbrechts – bas.huijbrechts@tno.nl | | |
| Condition(s) for reuse: | * Free to use | | |
|  | *Latest update: 2018-10-02* | | |

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| Name: Semantic-based Jupyter Notebook Search Engine | | | | |
| Input(s): | | Main feature(s) | Output(s): | |
| * Repositories of Jupyter Notebooks * Semantic Graphs of domain knowledge (based on Semantic Graph Extraction from Relevant Domain Knowledge Documentation) | | * Multi-dimensional search (text, semantic graph, data structure) * Search results adapted to user’s feedback | * Jupyter Notebooks | |
| Unique Selling Proposition(s): | * Leverages on semantic graphs to expand queries to encompass broader, domain-specific concepts * Automatically adapts its search strategy based on user’s feedback | | |
| Integration constraint(s): | * Python 3.6 * Semantic Graphs (see form above) * Flask 1.0 * React 16.5.2 * Neo4j 3.5 * Elasticsearch 6.4.1 | | |
| Intended user(s): | * Domain experts of high-tech systems | | |
| Provider: | * Embedded Systems Innovation by TNO (TNO-ESI)   [www.esi.nl](http://www.esi.nl) | | |
| Contact point: | * Bas Huijbrechts – bas.huijbrechts@tno.nl | | |
| Condition(s) for reuse: | * Free to use | | |
|  | *Latest update: 2018-10-02* | | |

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| Name: Yanomaly | | | | |
| Input(s): | | Main feature(s) | Output(s): | |
| * Text log files * Numeric data | | * Unsupervised AI based anomaly detection | * Anomaly scores and root cause analysis scores | |
| Unique Selling Proposition(s): | * Capability of processing both text logs and numeric data * Capability of processing multivariate data generated by complex systems * Unsupervised training: no need for annotated examples of known anomalies | | |
| Integration constraint(s): | * Runs on Ubuntu Linux in docker containers * Connectors available with REST API, OSI PI, MQTT | | |
| Intended user(s): | * Service desk personnel * Maintenance personnel * Plant operators | | |
| Provider: | * Yazzoom | | |
| Contact point: | * David Verstraeten, engineering manager and partner, David.verstraeten@yazzoom.com | | |
| Condition(s) for reuse: | * Commercial product with yearly or perpetual software license fee | | |
|  | *Latest update: 2018-10-22* | | |

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| Name: Distributed Plugin Adapters | | | | |
| Input(s): | | Main feature(s) | Output(s): | |
| * System to be tested | | * Distributed platform and implementation independent way to connect to systems (directly or over a network). | * Tested system | |
| Unique Selling Proposition(s): | * Platform independent * Implementation independent * Distributed * Potential testing standard | | |
| Integration constraint(s): | * Google protocol buffers (open source) * Websockets (web-standard) | | |
| Intended user(s): | * Testers and automated testing tools | | |
| Provider: | * Axini B.V. | | |
| Contact point: | * Machiel van der Bijl (vdbijl@axini.com) | | |
| Condition(s) for reuse: | * Axini Licence | | |
|  | *Latest update: 2018-10-29* | | |

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| Name: Safe Evaluation Sandbox | | | | |
| Input(s): | | Main feature(s) | Output(s): | |
| * Code with potential side-effects | | * Fast and secure sandbox to execute code with potential malicious side-effects | * Safe execution within safety parameters or an error | |
| Unique Selling Proposition(s): | * Linux platform * Fast * Implementation independent | | |
| Integration constraint(s): | * Linux | | |
| Intended user(s): | * Creators of tools that allow arbitrary code execution | | |
| Provider: | * Axini B.V. | | |
| Contact point: | * Machiel van der Bijl (vdbijl@axini.com) | | |
| Condition(s) for reuse: | * MIT license | | |
|  | *Latest update: 2018-10-29* | | |