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Kontakt

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Fachausschüsse

- [GMA Fachausschuss 7.25 - "Testen vernetzter Systeme in Industrie 4.0"](#) (seit 2020)

Sprechstunde

Nach Vereinbarung.

Forschung

Meine Forschung führt die Gebiete des maschinellen Lernens, der funktionalen Sicherheit und Systemzuverlässigkeit und der Überprüfung sicherheitskritischer eingebetteter Systeme zusammen. Es sollen bewährte Werkzeuge wie auch neue Techniken, auf die aus den aufsteigenden Technologien im Zuge des Internet der Produktion resultierenden Probleme, angewendet werden.

Abgeschlossene Abschlussarbeiten

- (Bachelor) Planbarkeitsanalyse einer Fertigungsanlage mit zeitbewerteten Modellen
 - (Bachelor) Modellierung und Analyse einer Fertigungsanlage
- (Master) Application of Model-Based Testing to a Cyber-Physical Production System
- Statische Analyse für Steuerungssoftware im Internet der Produktion
- Testfallgenerierung für Steuerungssoftware im Internet der Produktion

Lehre

Semester	Titel	Art
Wintersemester 21/22	Proseminar: Grundlagen eingebetteter Systeme	S
	Seminar: Ausgesuchte Themen zur Eingebetteten Software	S
	Praktikum Systemprogrammierung (Versuch 1)	P
Sommersemester 21	Proseminar: Grundlagen eingebetteter Systeme	S
	Seminar: Ausgesuchte Themen zur Eingebetteten Software	S
Wintersemester 20/21	Proseminar: Grundlagen eingebetteter Systeme	S
	Seminar: Ausgesuchte Themen zur Eingebetteten Software	S
Sommersemester 20	Proseminar: Grundlagen eingebetteter Systeme	S
	Seminar: Ausgesuchte Themen zur Eingebetteten Software	S
Wintersemester 19/20	Proseminar: Grundlagen eingebetteter Systeme	S
	Seminar: Ausgesuchte Themen zur Eingebetteten Software	S
	Praktikum Systemprogrammierung (Versuch 1)	P
Sommersemester 19	Proseminar: Grundlagen eingebetteter Systeme	S
	Seminar: Ausgesuchte Themen zur Eingebetteten Software	S
	Praktikum Systemprogrammierung (Versuch 1)	P
Wintersemester 18/19	Cyber-Physische Systeme in Medizintechnik und Mobilität	S
	Modellbasiertes Testen & Analyse eingebetteter Software	S
	Formale und semiformale Methoden für eingebettete Software	S
	Proseminar: Grundlagen eingebetteter Systeme	S
	Praktikum Systemprogrammierung (Versuch 1)	P
Sommersemester 18	Entwicklung NXT gesteuerter LEGO-Fahrzeuge mit Java	P
	Formale und semiformale Methoden für eingebettete Software	S
	Praktikum Systemprogrammierung (Versuch 1)	P

Veröffentlichungen

[BBZ+23]

[PDFBIB](#)

Behery, M. A. A., Brauner, P., Zhou, H. A., Uysal, M. S., Samsonov, V., Bellgardt, M., Brillowski, F. S., Brockhoff, T., Farhang Ghahfarokhi, A., Gleim, L. C., Gorißen, L. M., Grochowski, M., Henn, T., Iacomini, E., Kaster, T., Koren, I., Liebenberg, M. R., Reinsch, L. N., Tirpitz, L., Trinh, M., Posada Moreno, A. F., Liehner, G. L. V., Schemmer, T., Vervier, L. S., Völker, M., Walderich, P., Zhang, S., Brecher, C., Schmitt, R. H., Decker, S. J., Gries, T., Häfner, C. L., Herty, M., Jarke, M., Kowalewski, S., Kuhlen, T., Schleifenbaum, J. H., Trimpe, J. S., van der Aalst, W. M. P., Ziefle, M., and Lakemeyer, G., "Actionable Artificial Intelligence for the Future of Production"Cham: Springer International Publishing, 2023, pp. 1-46.

Actionable Artificial Intelligence for the Future of Production

Bibtex entry :

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@inbook { BBZ+23,
  author = { Behery, Mohamed Anwar Abdellatif and Brauner, Philipp
and
    Zhou, Hans Aoyang and Uysal, Merih Seran and Samsonov,
    Vladimir and Bellgardt, Martin and Brillowski, Florian
    Sascha and Brockhoff, Tobias and Farhang Ghahfarokhi,
    Anahita and Gleim, Lars Christoph and Gori{\ss}en, Leon
    Michel and Grochowski, Marco and Henn, Thomas and Iacomini,
    Elisa and Kaster, Thomas and Koren, István and Liebenberg,
    Martin Roland and Reinsch, Leon Niwes and Tirpitz, Liam and
    Trinh, Minh and Posada Moreno, Andres Felipe and Liehner,
    Gian Luca Valentin and Schemmer, Thomas and Vervier, Luisa
    Sophie and V{"o}lker, Marcus and Walderich, Philipp and
    Zhang, Song and Brecher, Christian and Schmitt, Robert H.
    and Decker, Stefan Josef and Gries, Thomas and H{"a}fner,
    Constantin Leon and Herty, Michael and Jarke, Matthias and
    Kowalewski, Stefan and Kuhlen, Torsten and Schleifenbaum,
    Johannes Henrich and Trimpe, Johann Sebastian and van der
    Aalst, Wil M. P. and Ziefle, Martina and Lakemeyer, Gerhard },
  title = { Actionable Artificial Intelligence for the Future of
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  booktitle = { Internet of production : fundamentals, applications
and
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[GVK22]

PDFBIB

Grochowski, M., Völker, M., and Kowalewski, S., "Test Suite Augmentation for Reconfigurable

PLC Software in the Internet of Production", in *Proc. Formal Methods for Industrial Critical Systems : 27th International Conference, FMICS 2022, Warsaw, Poland, September 14-15, 2022, Proceedings / edited by Jan Friso Groote, Marieke Huisman*, Cham, 2022 in Lecture notes in computer science, Springer, pp. 137-154.

Test Suite Augmentation for Reconfigurable PLC Software in the Internet of Production

Bibtex entry :

```
@inproceedings { GVK22,  
  author = { Grochowski, Marco and Völker, Marcus and Kowalewski,  
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in  
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  booktitle = { Formal Methods for Industrial Critical Systems : 27th  
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[GVK22a]

[PDFBIB](#)

Grochowski, M., Völker, M., and Kowalewski, S., "Automatic Test Suite Generation for PLC Software in the Internet of Production", in *Proc. 2022 27th IEEE International Conference on Emerging Technologies and Factory Automation (ETFA) : 6-9 Sept. 2022 / [IEEE Industrial Electronics Society, IEEE]*, Piscataway, NJ, 2022, IEEE, p. 8.

Automatic Test Suite Generation for PLC Software in the Internet of Production

Bibtex entry :

```
@inproceedings { GVK22a,
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```

author = { Grochowski, Marco and V{"o"}lker, Marcus and Kowalewski,
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[BBG+20]

[PDFBIB](#)

Buchsbaum, M. S. K., Brecher, C., Grochowski, M., and Kowalewski, S., "Identifikation von Informationen zur Beschreibung der Systemgrenzen eines sicheren, cyber-physischen Automatisierungssystems", in *Proc. Entwurf komplexer Automatisierungssysteme : Beschreibungsmittel, Methoden, Werkzeuge und Anwendungen : 16. Fachtagung EKA 2020 / Ulrich Jumar, Christian Diedrich (Hrsg.)*, Magdeburg, 2020, Institut für Automation und Kommunikation e.V., An-Institut der Otto-von-Guericke-Universität Magdeburg, p. 10.

Identifikation von Informationen zur Beschreibung der Systemgrenzen eines sicheren, cyber-physischen Automatisierungssystems

Bibtex entry :

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@inproceedings { BBG+20,
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    An-Institut der Otto-von-Guericke-Universit{"a"}t Magdeburg },
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[GKB+20]

[PDFBIB](#)

Grochowski, M., Kowalewski, S., Buchsbaum, M. S. K., and Brecher, C., "Befähigung der Testautomatisierung für ein cyber-physisches Produktionssystem", in *Proc. Entwurf komplexer Automatisierungssysteme : Beschreibungsmittel, Methoden, Werkzeuge und Anwendungen : 16. Fachtagung EKA 2020 / Ulrich Jumar, Christian Diedrich (Hrsg.)*, Magdeburg, 2020, Institut für Automation und Kommunikation e.V. - An-Institut der Otto-von-Guericke-Universität Magdeburg, p. 10.

Befähigung der Testautomatisierung für ein cyber-physisches Produktionssystem

Bibtex entry :

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@inproceedings { GKB+20,
  author = { Grochowski, Marco and Kowalewski, Stefan and Buchsbaum,
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[GSB+20]

PDFBIB

Grochowski, M., Simon, H., Bohlender, D., Kowalewski, S., Löcklin, A., Müller, T., Jazdi, N., Zeller, A., and Weyrich, M., "Formale Methoden für rekonfigurierbare cyber-physische Systeme in der Produktion", *Automatisierungstechnik*, vol. 68, iss. 1, pp. 3-14, 2020

Formale Methoden für rekonfigurierbare cyber-physische Systeme in der Produktion

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@article { GSB+20,
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[KGE+20]

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König, G., Grochowski, M., Eckert, M., Jakobczak, F., Stollenwerk, J., Kowalewski, S., and Loosen, P., "Apparat zur automatisierten Justage optischer Systeme", *DGaO-Proceedings*, vol. 2020, 2020

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angewandte
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f{"u}r
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[GKB+19]

[PDFBIB](#)

Grochowski, M., Kowalewski, S., Buchsbaum, M. S. K., and Brecher, C., "Applying Runtime Monitoring to the Industrial Internet of Things", in *Proc. 2019 24th IEEE International Conference on Emerging Technologies and Factory Automation (ETFA) : Paraninfo Building, University of Zaragoza, Zaragoza, Spain, 10-13 September, 2019 : proceedings / organized by: University of Zaragoza, Spain ; sponsored by: the Institute of Electrical and Electronics Engineers (IEEE), IEEE Industrial Electronics Society (IES), Aragón Institute for Engineering Research (I3A), Spain, Piscataway, NJ, 2019, IEEE.*

Applying Runtime Monitoring to the Industrial Internet of Things

Bibtex entry :

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@inproceedings { GKB+19,
author = { Grochowski, Marco and Kowalewski, Stefan and Buchsbaum,
Melanie Sarah Katharina and Brecher, Christian },
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booktitle = { 2019 24th IEEE International Conference on Emerging
Technologies and Factory Automation (ETFA) : Paraninfo
Building, University of Zaragoza, Zaragoza, Spain, 10-13
September, 2019 : proceedings / organized by: University of
Zaragoza, Spain ; sponsored by: the Institute of Electrical
and Electronics Engineers (IEEE), IEEE Industrial
Electronics Society (IES), Aragón Institute for Engineering
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and Factory Automation, Zaragoza (Spain), 2019-09-10 -
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[GKB+19a]

[PDFBIB](#)

Grochowski, M., Kowalewski, S., Buchsbaum, M. S. K., and Brecher, C., "Applying Passive Testing to an Industrial Internet of Things Plant", in *Proc. VALID 2019 : the Eleventh International Conference on Advances in System Testing and Validation Lifecycle : November 24-28, 2019, Valencia, Spain / IARIA ; VALID 2019 editors: Jos van Rooyen (Identify - Software Quality Services, the Netherlands), Samuele Buro (University of Verona, Italy), Marco Campion (University of Verona, Italy), Michele Pasqua (University of Verona, Italy), [Wilmington, DE, USA], 2019, IARIA, pp. 31-37.*

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Verona, Italy), Marco Campion (University of Verona, Italy),
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[GSA+18]

[PDFBIB](#)

Grochowski, M., Schweigler, M., Alrifaae, B., and Kowalewski, S., "A GPS-aided Inertial Navigation System for Vehicular Navigation using a Smartphone", *IFAC-PapersOnLine*, vol. 51, iss. 10, pp. 121-126, 2018

A GPS-aided Inertial Navigation System for Vehicular Navigation using a Smartphone

Bibtex entry :

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@article { GSA+18,
  author = { Grochowski, Marco and Schweigler, Martin and Alrifaae,
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Computational
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[SGT+18]

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Ground Surface Pattern Recognition with Hidden Markov Models for Low Cost Positioning Improvement

Bibtex entry :

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From:

<https://embedded.rwth-aachen.de/> - Informatik 11 - Embedded Software

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Last update: **2022/10/27 09:40**

