

Dimitri Bohlender, M.Sc. RWTH

Kontakt



Wissenschaftlicher Mitarbeiter

Tel. +49 241 80 21174

Fax +49 241 80 22150

Adresse: Ahornstr. 55, 52074 Aachen, Germany

Büro: Raum 2302 (Gebäude H, 3.OG)

Email: [bohlender\[at\]embedded\[dot\]rwth-aachen\[dot\]de](mailto:bohlender@embedded.rwth-aachen.de)

Web: bohlender.pro

Offene Abschlussarbeiten

Aktuell liegen keine ausformulierten, offenen Abschlussarbeiten vor. Bei Interesse an formalen Methoden können wir aber zusammen geeignete Themen für Bachelor- und Masterarbeiten ausarbeiten. Eigene Vorschläge sind ebenfalls möglich.

Lehre

Semester	Titel	Art
WS 19/20	Proseminar: Grundlagen eingebetteter Systeme	S
SS 19	Seminar: Ausgesuchte Themen zur Eingebetteten Software	S
	Proseminar: Grundlagen eingebetteter Systeme	S
WS 18/19	Formale Methoden für Steuerungssoftware	V
	Formale und semiformale Methoden für eingebettete Software	S
SS 18	Formale und semiformale Methoden für eingebettete Software	S

Semester	Titel	Art
WS 17/18	Formale Methoden für Steuerungssoftware	V
	Formale und semiformale Methoden für eingebettete Software	S
SS 17	Formale und semiformale Methoden für eingebettete Software	S
WS 16/17	Formale Methoden für Steuerungssoftware	V
SS 16	Formale und semiformale Methoden für eingebettete Software	S
WS 15/16	Formale Methoden für Steuerungssoftware	V
	Formale und semiformale Methoden für eingebettete Software	S
SS 15	Formale und semiformale Methoden für eingebettete Software	S

Publikationen

[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

Bibtex entry :

```
@article { GSB+20,  
  author = { Grochowski, Marco and Simon, Hendrik and Bohlender,  
Dimitri  
  and Kowalewski, Stefan and L{"o}cklin, Andreas and  
M{"u}ller, Timo and Jazdi, Nasser and Zeller, Andreas and  
Weyrich, Michael },  
  title = { Formale Methoden f{"u}r rekonfigurierbare cyber-  
physische  
  Systeme in der Produktion },  
  journal = { Automatisierungstechnik },  
  publisher = { De Gruyter },  
  pages = { 3-14 },  
  volume = { 68 },  
  number = { 1 },  
  year = { 2020 },  
  address = { Berlin },  
  issn = { 2196-677X },  
  doi = { 10.1515/auto-2019-0115 },  
  typ = { PUB:(DE-HGF)16 },  
  reportid = { RWTH-2019-12214 },  
  cin = { 122810 / 120000 },  
}
```

[BCK+19]

PDFBIB

Bohlender, D., Chiyah Garcia, F. J., Köhl, M., Menghi, C., and Wortmann, A., "On Explainability and its Characterization", *Explainable Software for Cyber-Physical Systems (ES4CPS) : Report from the GI Dagstuhl Seminar 19023 : January 06-11 2019, Schloss Dagstuhl / Edited By: Joel Greenyer ; Malte Lochau ; Thomas Vogel*, pp. 4-7, 2019

On Explainability and its Characterization

Bibtex entry :

```
@article { BCK+19,
  author = { Bohlender, Dimitri and Chiyah Garcia, Francisco J. and
    K{"o}hl, Maximilian and Menghi, Claudio and Wortmann,
    Andreas },
  title = { On Explainability and its Characterization },
  journal = { Explainable Software for Cyber-Physical Systems
  (ES4CPS) :
    Report from the GI Dagstuhl Seminar 19023 : January 06-11
    2019, Schloss Dagstuhl / Edited By: Joel Greenyer ; Malte
    Lochau ; Thomas Vogel },
  pages = { 4-7 },
  year = { 2019 },
  organization = { GI Dagstuhl Seminar 19023 on Explainable Software
  for
    Cyber-Physical Systems, Dagstuhl (Germany), 2019-01-06 -
    2019-01-11 },
  doi = { 10.18154/RWTH-2020-01625 },
  typ = { PUB:(DE-HGF)25 },
  reportid = { RWTH-2020-01625 },
  cin = { 122810 / 120000 / 121510 },
  url = { https://arxiv.org/pdf/1904.11851.pdf#page=9 },
}
```

[BK19]

PDFBIB

Bohlender, D. and Kowalewski, S., "Leveraging Horn clause solving for compositional verification of PLC software", *Discrete event dynamic systems*, vol. 30, pp. 1-24, 2019

Leveraging Horn clause solving for compositional verification of PLC software

Bibtex entry :

```
@article { BK19,
  author = { Bohlender, Dimitri and Kowalewski, Stefan },
  title = { Leveraging Horn clause solving for compositional
  verification of PLC software },
  journal = { Discrete event dynamic systems },
  publisher = { Springer Science + Business Media B.V },
  pages = { 1-24 },
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volume = { 30 },
year = { 2019 },
address = { Dordrecht [u.a.] },
issn = { 1573-7594 },
doi = { 10.1007/s10626-019-00296-8 },
typ = { PUB:(DE-HGF)16 },
reportid = { RWTH-2019-12207 },
cin = { 122810 / 120000 },
url = { http://publications.rwth-aachen.de/record/775404 },
}
```

[BK19a]

[PDFBIB](#)

Bohlender, D. and Köhl, M. A., "Towards a Characterization of Explainable Systems", , 2019

Towards a Characterization of Explainable Systems

Bibtex entry :

```
@article { BK19a,
  author = { Bohlender, Dimitri and Köhl, Maximilian A. },
  title = { Towards a Characterization of Explainable Systems },
  year = { 2019 },
  typ = { PUB:(DE-HGF)25 },
  reportid = { RWTH-2020-01624 },
  cin = { 122810 / 120000 },
  url = {
https://www.semanticscholar.org/paper/Towards-a-Characterization-of-Explainable-Systems-Bohlender-K%C3%B6hl/b3516a71fed895a1a88b7d9842eca41c0fb48b7d },
}
```

[KBL+19]

[PDFBIB](#)

Köhl, M. A., Baum, K., Langer, M., Oster, D., Speith, T., and Bohlender, D., "Explainability as a Non-Functional Requirement", in *Proc. 2019 IEEE 27th International Requirements Engineering Conference : 23-27 September 2019, Jeju Island, South Korea : proceedings / editors: Daniela Damian and Anna Perini (Program Chairs), Seok-Won Lee (General Chair)*, Piscataway, NJ, 2019, IEEE, pp. 363-368.

Explainability as a Non-Functional Requirement

Bibtex entry :

```
@inproceedings { KBL+19,
  author = { Köhl, Maximilian A. and Baum, Kevin and Langer, Markus
    and Oster, Daniel and Speith, Timo and Bohlender, Dimitri },
  title = { Explainability as a Non-Functional Requirement },
  booktitle = { 2019 IEEE 27th International Requirements Engineering
```

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Conference : 23-27 September 2019, Jeju Island, South Korea
: proceedings / editors: Daniela Damian and Anna Perini
(Program Chairs), Seok-Won Lee (General Chair) },
publisher = { IEEE },
pages = { 363-368 },
year = { 2019 },
address = { Piscataway, JN },
organization = { 2019 IEEE 27th International Requirements
Engineering
Conference, Jeju Island (South Korea), 2019-09-23 -
2019-09-27 },
doi = { 10.1109/RE.2019.00046 },
typ = { PUB:(DE-HGF)7 },
reportid = { RWTH-2019-12206 },
cin = { 122810 / 120000 },
url = { http://publications.rwth-aachen.de/record/775403 },
}

```

[BHK18]

[PDFBIB](#)

Bohlender, D., Hamm, D., and Kowalewski, S., "Cycle-Bounded Model Checking of PLC Software via Dynamic Large-Block Encoding", in *Proc. Applied computing 2018 : the 33rd Annual ACM Symposium on Applied Computing : Pau, France, April 9-13, 2018 / sponsored by: ACM Special Interest Group on Applied Computing ; conference chairs: Hisham M. Haddad (Kennesaw State University, USA), Roger L. Wainwright (University of Tulsa, USA), Richard Chbeir (University of Pau & Pays Adour, France)*, New York, NY, 2018, ACM, pp. 1891-1898.

Cycle-Bounded Model Checking of PLC Software via Dynamic Large-Block Encoding

Bibtex entry :

```

@inproceedings { BHK18,
  author = { Bohlender, Dimitri and Hamm, Daniel and Kowalewski,
Stefan },
  title = { Cycle-Bounded Model Checking of PLC Software via Dynamic
Large-Block Encoding },
  booktitle = { Applied computing 2018 : the 33rd Annual ACM
Symposium on
Applied Computing : Pau, France, April 9-13, 2018 /
sponsored by: ACM Special Interest Group on Applied
Computing ; conference chairs: Hisham M. Haddad (Kennesaw
State University, USA), Roger L. Wainwright (University of
Tulsa, USA), Richard Chbeir (University of Pau & Pays Adour,
France) },
  publisher = { ACM },
  pages = { 1891-1898 },
  year = { 2018 },
  address = { New York, NY },
  organization = { 33rd ACM Symposium on Applied Computing, Pau

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(France),  
  2018-04-09 - 2018-04-13 },  
  doi = { 10.1145/3167132.3167334 },  
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  reportid = { RWTH-2018-231950 },  
  cin = { 122810 / 120000 },  
  url = { http://publications.rwth-aachen.de/record/752221 },  
}
```

[BK18]

[PDFBIB](#)

Bohlender, D. and Kowalewski, S., "Compositional Verification of PLC Software using Horn Clauses and Mode Abstraction", *IFAC-PapersOnLine*, vol. 51, iss. 7, pp. 428-433, 2018

Compositional Verification of PLC Software using Horn Clauses and Mode Abstraction

Bibtex entry :

```
@article { BK18,  
  author = { Bohlender, Dimitri and Kowalewski, Stefan },  
  title = { Compositional Verification of PLC Software using Horn  
    Clauses and Mode Abstraction },  
  journal = { IFAC-PapersOnLine },  
  pages = { 428-433 },  
  volume = { 51 },  
  number = { 7 },  
  year = { 2018 },  
  address = { Laxenburg },  
  issn = { 2405-8963 },  
  organization = { 14th IFAC International Workshop on Discrete Event  
Systems,  
  Castellammare di Stabia (Italy), 2018-05-30 - 2018-06-01 },  
  doi = { 10.1016/j.ifacol.2018.06.336 },  
  typ = { PUB:(DE-HGF)16 },  
  reportid = { RWTH-2018-227071 },  
  cin = { 122810 / 120000 },  
  url = { http://publications.rwth-aachen.de/record/730763 },  
}
```

[BK18a]

[PDFBIB](#)

Bohlender, D. and Kowalewski, S., "Design and Verification of Restart-Robust Industrial Control Software", in *Proc. Integrated Formal Methods : 14th International Conference, IFM 2018, Maynooth, Ireland, September 5-7, 2018, Proceedings / edited by Carlo A. Furia, Kirsten Winter*, Cham, 2018 in Lecture Notes in Computer Science, Springer International Publishing, pp. 47-68.

Design and Verification of Restart-Robust Industrial Control Software

Bibtex entry :

```
@inproceedings { BK18a,
  author = { Bohlender, Dimitri and Kowalewski, Stefan },
  title = { Design and Verification of Restart-Robust Industrial Control Software },
  booktitle = { Integrated Formal Methods : 14th International Conference, IFM 2018, Maynooth, Ireland, September 5-7, 2018, Proceedings / edited by Carlo A. Furia, Kirsten Winter },
  publisher = { Springer International Publishing },
  pages = { 47-68 },
  series = { Lecture Notes in Computer Science },
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  doi = { 10.1007/978-3-319-98938-9_4 },
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  reportid = { RWTH-2018-231948 },
  cin = { 122810 / 120000 },
  url = { http://publications.rwth-aachen.de/record/752219 },
}
```

[UVS+18]

[PDFBIB](#)

Ulewicz, S., Vogel-Heuser, B., Simon, H., Bohlender, D., Obster, M., and Kowalewski, S., "A priori test coverage estimation for automated production systems : Using generated behavior models for coverage calculation", in *Proc. 2017 22nd IEEE International Conference on Emerging Technologies and Factory Automation : September 12-15, 2017, Limassol, Cyprus / ABB, IEEE, IES, University of Cyprus*, [Piscataway, NJ], 2018 in IEEE International Conference on Emerging Technologies and Factory Automation-ETFA, IEEE, p. 4.

A priori test coverage estimation for automated production systems : Using generated behavior models for coverage calculation

Bibtex entry :

```
@inproceedings { UVS+18,
  author = { Ulewicz, Sebastian and Vogel-Heuser, Birgit and Simon, Hendrik and Bohlender, Dimitri and Obster, Mathias and Kowalewski, Stefan },
  title = { A priori test coverage estimation for automated production
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systems : Using generated behavior models for coverage
calculation },
booktitle = { 2017 22nd IEEE International Conference on Emerging
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Limassol, Cyprus / ABB, IEEE, IES, University of Cyprus },
publisher = { IEEE },
pages = { 4 Seiten },
series = { IEEE International Conference on Emerging Technologies
and
Factory Automation-ETFA },
year = { 2018 },
address = { [Piscataway, NJ] },
organization = { 22nd IEEE International Conference on Emerging
Technologies
and Factory Automation, Limassol (Cyprus), 2017-09-12 -
2017-09-15 },
doi = { 10.1109/ETFA.2017.8247704 },
typ = { PUB:(DE-HGF)7 },
reportid = { RWTH-2018-223451 },
cin = { 122810 / 120000 },
url = { http://publications.rwth-aachen.de/record/722217 },
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[BSF+16]

[PDFBIB](#)

Bohlender, D., Simon, H., Friedrich, N., Kowalewski, S., and Hauck-Stattelmann, S., "Concolic test generation for PLC programs using coverage metrics", in *Proc. 2016 13th International Workshop on Discrete Event Systems (WODES) : May 30-June 1, 2016, Xi'an, China / edited by Christos G. Cassandras, Alessandro Giua, Zhiwu Li ; sponsored by IEEE - Control Systems Society, Piscataway, NJ, 2016, IEEE, pp. 432-437.*

Concolic test generation for PLC programs using coverage metrics

Bibtex entry :

```
@inproceedings { BSF+16,
author = { Bohlender, Dimitri and Simon, Hendrik and Friedrich,
Nico
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title = { Concolic test generation for PLC programs using coverage
metrics },
booktitle = { 2016 13th International Workshop on Discrete Event
Systems
(WODES) : May 30-June 1, 2016, Xi'an, China / edited by
Christos G. Cassandras, Alessandro Giua, Zhiwu Li ;
sponsored by IEEE - Control Systems Society },
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pages = { 432-437 },
year = { 2016 },
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Systems, Xi'an
(Peoples R China), 2016-05-30 - 2016-06-01 },
doi = { 10.1109/WODES.2016.7497884 },
typ = { PUB:(DE-HGF)7 },
reportid = { RWTH-2016-11193 },
cin = { 122810 / 120000 },
url = { http://publications.rwth-aachen.de/record/679431 },
}

```

[BSK+16]

PDFBIB

Bohlender, D., Simon, H., Kowalewski, S., and Hauck-Stattelmann, S., "Symbolische Ausführung zum Testen von SPS-Programmen", in *Proc. Automation 2016 : secure & reliable in the digital world : 17. Branchentreff der Mess- und Automatisierungstechnik : Baden-Baden, 07. und 08. Juni 2016 / VDI/VDE Mess- und Automatisierungstechnik*, Düsseldorf, 2016 in VDI-Berichte, VDI Verlag GmbH, pp. 13-14.

Symbolische Ausführung zum Testen von SPS-Programmen

Bibtex entry :

```

@inproceedings { BSK+16,
author = { Bohlender, Dimitri and Simon, Hendrik and Kowalewski,
Stefan
and Hauck-Stattelmann, S. },
title = { Symbolische Ausf{\u}hrung zum Testen von SPS-Programmen
},
booktitle = { Automation 2016 : secure & reliable in the digital
world :
17. Branchentreff der Mess- und Automatisierungstechnik :
Baden-Baden, 07. und 08. Juni 2016 / VDI/VDE Mess- und
Automatisierungstechnik },
publisher = { VDI Verlag GmbH },
pages = { 13-14 },
series = { VDI-Berichte },
year = { 2016 },
address = { D{\u}sseldorf },
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Automatisierungstechnik,
Baden-Baden (Germany), 2016-06-07 - 2016-06-08 },
typ = { PUB:(DE-HGF)7 },
reportid = { RWTH-2016-12035 },
cin = { 122810 / 120000 },
url = { http://publications.rwth-aachen.de/record/680852 },
}

```

[BSK16]

PDFBIB

Bohlender, D., Simon, H., and Kowalewski, S., "Symbolic verification of PLC safety-applications based on PLCopen automata", in *Proc. MBMV 2016 : 19. GI/ITG/GMM-Workshop "Methoden und Beschreibungssprachen zur Modellierung und Verifikation von Schaltungen und Systemen" : Albert-Ludwigs-Universität Freiburg im Breisgau 1.-2. März 2016 / Ralf Wimmer (Herausgeber)*, Freiburg im Breisgau, 2016, Albert-Ludwigs-Universität, pp. 33-45.

Symbolic verification of PLC safety-applications based on PLCopen automata

Bibtex entry :

```
@inproceedings { BSK16,  
  author = { Bohlender, Dimitri and Simon, Hendrik and Kowalewski,  
Stefan },  
  title = { Symbolic verification of PLC safety-applications based on  
PLCopen automata },  
  booktitle = { MBMV 2016 : 19. GI/ITG/GMM-Workshop "Methoden und  
Beschreibungssprachen zur Modellierung und Verifikation von  
Schaltungen und Systemen" : Albert-Ludwigs-Universit{"a}t  
Freiburg im Breisgau 1.-2. M{"a}rz 2016 / Ralf Wimmer  
(Herausgeber) },  
  publisher = { Albert-Ludwigs-Universit{"a}t },  
  pages = { 33-45 },  
  year = { 2016 },  
  address = { Freiburg im Breisgau },  
  organization = { 19. GI/ITG/GMM-Workshop "Methoden und  
Beschreibungssprachen  
zur Modellierung und Verifikation von Schaltungen und  
Systemen", Freiburg im Breisgau (Germany), 2016-03-01 -  
2016-03-02 },  
  doi = { 10.6094/UNIFR/10636 },  
  typ = { PUB:(DE-HGF)7 },  
  reportid = { RWTH-CONV-207902 },  
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http://publications.rwth-aachen.de/record/573821/files/573821.pdf },  
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[BBJKNN14]

PDFBIB

Bohlender, D., Bruintjes, H., Junges, S., Katelaan, J., Nguyen, V. Y., and Noll, T., "A Review of Statistical Model Checking Pitfalls on Real-Time Stochastic Models", in *Proc. Leveraging Applications of Formal Methods, Verification and Validation. Specialized Techniques and Applications - 6th International Symposium, ISoLA 2014, Imperial, Corfu, Greece, October 8-11, 2014, Proceedings, Part {II}*, 2014, IEEE, pp. 177-192.

A Review of Statistical Model Checking Pitfalls on Real-Time Stochastic Models

Bibtex entry :

```
@inproceedings { BBJKNN14,  
  author = { Dimitri Bohlender and Harold Bruintjes and Sebastian  
Junges  
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  title = { A Review of Statistical Model Checking Pitfalls on Real-  
Time  
  Stochastic Models },  
  booktitle = { Leveraging Applications of Formal Methods,  
Verification and  
  Validation. Specialized Techniques and Applications - 6th  
International Symposium, ISoLA 2014, Imperial, Corfu,  
Greece, October 8-11, 2014, Proceedings, Part {II} },  
  pages = { 177--192 },  
  publisher = { IEEE },  
  publishedas = { Druck Online },  
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  language = { eng },  
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  timestamp = { Mon, 29 Sep 2014 11:09:02 +0200 },  
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  for_reporting_period = { 2014 },  
}
```

[BBK13]

[PDFBIB](#)

Biallas, S., Bohlender, D., and Kowalewski, S., "Boolean and Modular Abstractions for Programmable Logic Controllers", in *Proc. Dependable Control of Discrete Systems : DCDS13. - Vol. 4, P. 1*, Laxenburg, 2013, IFAC, pp. 97-102.

Boolean and Modular Abstractions for Programmable Logic Controllers

Bibtex entry :

```
@inproceedings { BBK13,  
  author = { Biallas, Sebastian and Bohlender, Dimitri and  
Kowalewski,  
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  title = { Boolean and Modular Abstractions for Programmable Logic  
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  booktitle = { Dependable Control of Discrete Systems : DCDS13. -  
Vol. 4,  
  P. 1 },  
  publisher = { IFAC },
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pages = { 97-102 },  
year = { 2013 },  
address = { Laxenburg },  
doi = { 10.3182/20130904-3-UK-4041.00011 },  
typ = { PUB:(DE-HGF)8 },  
reportid = { RWTH-CONV-203363 },  
cin = { 120000 / 122810 },  
url = { http://publications.rwth-aachen.de/record/225788 },  
}
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Permanent link:
<https://www.embedded.rwth-aachen.de/doku.php?id=lehrstuhl:mitarbeiter:bohlender>

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