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Forschungsgebiete

- Automatisierung und Flugführung für Kleinfluggeräte (MAVs)
- Statische Analyse von Blockdiagrammen
- Model Checking von Blockdiagrammen

Projekte

- [artshop](#)
- [IMAV](#)

Frühere Projekte

- [Teilnahme am Carolo Cup](#)

Lehre

Semester	Titel	Art
SS 2012	Praktikum Systemprogrammierung	P
WS 2012/13	Einführung in die technische Informatik	V/Ü
WS 2013/14	Einführung in die technische Informatik	V/Ü
SS 2015	NXT Programmierung mit Java	P
SS 2015	Seminar Modellbasiertes Testen und Analyse eingebetteter Software	S
WS 2015/16	Seminar Modellbasiertes Testen und Analyse eingebetteter Software	S
WS 2015/16	Seminar Formale und semiformale Methoden für eingebettete Software	S
SS 2016	NXT Programmierung mit Java	P
SS 2016	Seminar Formale und semiformale Methoden für eingebettete Software	S
WS 2016/17	Seminar Formale und semiformale Methoden für eingebettete Software	S

Sprechstunde

Nach Vereinbarung

Veröffentlichungen

[DDK+17]

[PDFBIB](#)

Dankert, J., Dernehl, C., Kusmenko, E., Eckstein, L., Kowalewski, S., and Rumpe, B. D., "RapidCoop - Robuste Architektur durch geeignete Paradigmen für Kooperativ Interagierende Automobile", in *Proc. AAET - Automatisiertes und Vernetztes Fahren : Beiträge zum gleichnamigen 18. Braunschweiger Symposium vom 8. und 9. Februar 2017, Stadthalle, Braunschweig / ITS automotive nord e.V. (Hrsg.)*, Braunschweig, 2017, ITS automotive nord e.V., pp. 225-244.

RapidCoop - Robuste Architektur durch geeignete Paradigmen für Kooperativ Interagierende Automobile

Bibtex entry :

```
@inproceedings { DDK+17,
  author = { Dankert, Jens and Dernehl, Christian and Kusmenko,
    Evgeny
      and Eckstein, Lutz and Kowalewski, Stefan and Rumpe,
      Bernhard Dieter },
  title = { RapidCoop - Robuste Architektur durch geeignete
    Paradigmen
      f{"u}r Kooperativ Interagierende Automobile },
  booktitle = { AAET - Automatisiertes und Vernetztes Fahren :
    Beitr{"a}ge
      zum gleichnamigen 18. Braunschweiger Symposium vom 8. und 9.
      Februar 2017, Stadthalle, Braunschweig / ITS automotive nord
      e.V. (Hrsg.) },
  publisher = { ITS automotive nord e.V. },
  pages = { 225-244 },
  year = { 2017 },
  address = { Braunschweig },
  organization = { 18. Braunschweiger Symposium AAET -
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    http://www.se-rwth.de/publications/RapidCoop-Robuste-Architektur-durch-
    geeignete-Paradigmen-fuer-Kooperativ-Interagierende-
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Automobile.pdf?PHPSESSID=eb66ba2042d9500e5135d33f6b7575af },  
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[DKK17]

[PDFBIB](#)

Dernehl, C., Kühn, J., and Kowalewski, S., "Case studies on automated verification with slope boundaries for block diagrams", *Computer Languages, Systems & Structures*, vol. 50, pp. 1-16, 2017

Case studies on automated verification with slope boundaries for block diagrams

Bibtex entry :

```
@article { DKK17,  
  author = { Dernehl, Christian and Kühn, Jan and Kowalewski,  
Stefan },  
  title = { Case studies on automated verification with slope  journal = { Computer Languages, Systems & Structures },  
  publisher = { Elsevier },  
  pages = { 1-16 },  
  volume = { 50 },  
  year = { 2017 },  
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  issn = { 1477-8424 },  
  doi = { 10.1016/j.cl.2017.09.001 },  
  typ = { PUB:(DE-HGF)16 },  
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  cin = { 122810 / 120000 },  
  url = { http://publications.rwth-aachen.de/record/752271 },  
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[Der16]

[PDFBIB](#)

Dernehl, C., "Automatic invariant checking for discrete block diagrams using Lyapunov functions with sat modulo theory solvers", in *Proc. 2016 European Control Conference (ECC) : June 29-July 1, 2016, Aalborg, Denmark / [European Control Association (EUCA)], [Piscataway, NJ], 2016*, IEEE, pp. 441-446.

Automatic invariant checking for discrete block diagrams using Lyapunov functions with sat modulo theory solvers

Bibtex entry :

```
@inproceedings { Der16,  
  author = { Dernehl, Christian },
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title = { Automatic invariant checking for discrete block diagrams
using Lyapunov functions with sat modulo theory solvers },
booktitle = { 2016 European Control Conference (ECC) : June 29-July
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2016, Aalborg, Denmark / [European Control Association
(EUCA)] },
publisher = { IEEE },
pages = { 441-446 },
year = { 2016 },
address = { [Piscataway, NJ] },
organization = { 2016 European Control Conference, Aalborg
(Denmark),
2016-06-29 - 2016-07-01 },
doi = { 10.1109/ECC.2016.7810324 },
typ = { PUB:(DE-HGF)7 },
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cin = { 122810 / 120000 },
url = { http://publications.rwth-aachen.de/record/696194 },
}

```

[DHK16]

[PDFBIB](#)

Dernehl, C., Hansen, N., and Kowalewski, S., "Abstract Interpretation of MATLAB Code with Interval Sets", in *Proc. Critical systems: formal methods and automated verification : Joint 21st International Workshop on Formal Methods for Industrial Critical Systems and 16th International Workshop on Automated Verification of Critical Systems, FMICS-AVoCS 2016, Pisa, Italy, September 26-28, 2016 : proceedings / Maurice H. ter Beek, Stefania Gnesi, Alexander Knapp (eds.)*, Cham, 2016 in Lecture Notes in Computer Science, Springer International Publishing, pp. 25-38.

Abstract Interpretation of MATLAB Code with Interval Sets

Bibtex entry :

```

@inproceedings { DHK16,
author = { Dernehl, Christian and Hansen, Norman and Kowalewski,
Stefan },
title = { Abstract Interpretation of MATLAB Code with Interval Sets
},
booktitle = { Critical systems: formal methods and automated
verification
: Joint 21st International Workshop on Formal Methods for
Industrial Critical Systems and 16th International Workshop
on Automated Verification of Critical Systems, FMICS-AVoCS
2016, Pisa, Italy, September 26-28, 2016 : proceedings /
Maurice H. ter Beek, Stefania Gnesi, Alexander Knapp (eds.) },
publisher = { Springer International Publishing },
pages = { 25-38 },
series = { Lecture Notes in Computer Science },
}

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year = { 2016 },
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organization = { 21st International Workshop on Formal Methods for
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    Critical Systems, Pisa (Italy), 2016-09-26 - 2016-09-28 },
doi = { 10.1007/978-3-319-45943-1 },
typ = { PUB:(DE-HGF)7 },
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url = { http://publications.rwth-aachen.de/record/680837 },
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[DHK16a]

[PDFBIB](#)

Dernehl, C., Hansen, N., and Kowalewski, S., "Combining Abstract Interpretation with Symbolic Execution for a Static Value Range Analysis of Block Diagrams", in *Proc. Software engineering and formal methods : 14th international conference, SEFM 2016, held as part of STAF 2016, Vienna, Austria, July 4-8, 2016 : proceedings / Rocco De Nicola, Eva Kühn (eds.)*, Cham, 2016 in *Lecture Notes in Computer Science*, Springer International Publishing, pp. 137-154.

Combining Abstract Interpretation with Symbolic Execution for a Static Value Range Analysis of Block Diagrams

Bibtex entry :

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@inproceedings { DHK16a,
    author = { Dernehl, Christian and Hansen, Norman and Kowalewski,
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for a Static Value Range Analysis of Block Diagrams },
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international
conference, SEFM 2016, held as part of STAF 2016, Vienna,
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K{"u}hn (eds.) },
    publisher = { Springer International Publishing },
    pages = { 137-154 },
    series = { Lecture Notes in Computer Science },
    year = { 2016 },
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    doi = { 10.1007/978-3-319-41591-8 },
    typ = { PUB:(DE-HGF)7 },
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[DKK16]

[PDFBIB](#)

Dernehl, C., Kühn, J., and Kowalewski, S., "Abstract Interpretation for Block Diagrams - Two Case Studies", in *Proc. MoDeVva 2016 : Model-Driven Engineering, Verification and Validation : proceedings of the 13th Workshop on Model-Driven Engineering, Verification and Validation co-located with ACM/IEEE 19th International Conference on Model Driven Engineering Languages and Systems (MODELS 2016) : Saint-Malo, France, October 3, 2016 / edited by Michalis Famelis, Daniel Ratiu, Gehan M. K. Selim*, [Erscheinungsort nicht ermittelbar], 2016 in CEUR workshop proceedings, [Verlag nicht ermittelbar], pp. 20-29.

Abstract Interpretation for Block Diagrams - Two Case Studies

Bibtex entry :

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@inproceedings { DKK16,
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  publisher = { [Verlag nicht ermittelbar] },
  pages = { 20-29 },
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  year = { 2016 },
  address = { [Erscheinungsort nicht ermittelbar] },
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  url = { http://ceur-ws.org/Vol-1713/MoDeVva_2016_paper_3.pdf },
}
```

[GHD+16]

[PDFBIB](#)

Gerlitz, T., Hansen, N., Dernehl, C., and Kowalewski, S., "Artshop: A Continuous Integration and Quality Assessment Framework for Model-Based Software Artifacts", in *Proc. [12. Dagstuhl-Workshop Modelbasierte Entwicklung eingebetteter Systeme (MBEES) / Michaela Huhn (Ostfalia Hochschule - Wolfenbüttel, DE), Matthias Riebisch (Universität Hamburg, DE), Bernhard Schätz*

(fortiss GmbH - München, DE)], 2016, fortiss Technischer Bericht, pp. 13-22.

artshop: A Continuous Integration and Quality Assessment Framework for Model-Based Software Artifacts

Bibtex entry :

```
@inproceedings { GHD+16,
  author = { Gerlitz, Thomas and Hansen, Norman and Dernehl,
Christian
  and Kowalewski, Stefan },
  title = { artshop: A Continuous Integration and Quality Assessment
Framework for Model-Based Software Artifacts },
  booktitle = { [12. Dagstuhl-Workshop Modelbasierte Entwicklung
eingebetteter Systeme (MBEES) / Michaela Huhn (Ostfalia
Hochschule – Wolfenbüttel, DE), Matthias Riebisch
(Universität Hamburg, DE), Bernhard Schätz (fortiss
GmbH – München, DE)] },
  publisher = { fortiss Technischer Bericht },
  pages = { 13-22 },
  year = { 2016 },
  organization = { Modellbasierte Entwicklung eingebetteter Systeme,
Dagstuhl
(Germany), 2016-03-30 - 2016-04-01 },
  typ = { PUB:(DE-HGF)8 },
  reportid = { RWTH-CONV-207908 },
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  url = { http://publications.rwth-aachen.de/record/573828 },
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```

[DHG+15]

[PDFBIB](#)

Dernehl, C., Hansen, N., Gerlitz, T., and Kowalewski, S., "Static Value Range Analysis for Matlab/Simulink-Models"[Bonn]: Ges. für Informatik, 2015, vol. 246, pp. 1649-1660.

Static Value Range Analysis for Matlab/Simulink-Models

Bibtex entry :

```
@inbook { DHG+15,
  author = { Dernehl, Christian and Hansen, Norman and Gerlitz,
Thomas
  and Kowalewski, Stefan },
  title = { Static Value Range Analysis for Matlab/Simulink-Models },
  booktitle = { Informatik 2015 : Tagung vom 28. September – 02.
Oktober
2015 in Cottbus / Douglas W. Cunningham ... (Hrsg.) },
  publisher = { Ges. für Informatik },
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pages = { 1649-1660 },
volume = { 246 },
series = { GI-Edition : lecture notes in informatics },
year = { 2015 },
address = { [Bonn] },
organization = { 45. Jahrestagung der Gesellschaft für
Informatik,
    Cottbus (Germany), 2015-09-28 - 2015-10-02 },
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cin = { 122810 / 120000 },
url = { http://publications.rwth-aachen.de/record/573834 },
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[SDK13]

[PDFBIB](#)

Schellen, J., Dernehl, C., and Kowalewski, S., "Optimizing Image Processing on OMAP3 with driver-level frame buering and color space conversion", in *Proc. International Micro Air Vehicle Conference and Flight Competition (IMAV)*, 2013, IMAV, pp. 1-8.

Optimizing Image Processing on OMAP3 with driver-level frame buering and color space conversion

Bibtex entry :

```
@inproceedings { SDK13,
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Kowalewski,
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[GDF+12]

[PDFBIB](#)

Gathmann, F., Dernehl, C., Franke, D., and Kowalewski, S., "An integrated vision aided GPS/INS Navigation System for ultra-low-cost MAVs", in *Proc. International Micro Air Vehicle Conference (IMAV)*, 2012, IMAV, pp. 1-8.

An integrated vision aided GPS/INS Navigation System for ultra-low-cost MAVs

Bibtex entry :

```
@inproceedings { GDF+12,
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Dominik
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  pages = { 1-8 },
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  typ = { PUB:(DE-HGF)8 },
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  url = { http://publications.rwth-aachen.de/record/752304 },
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[DFD+11]

[PDFBIB](#)

Dernehl, C., Franke, D., Diab, H., and Kowalewski, S., "An Architecture with Integrated Image Processing for Autonomous Micro Aerial Vehicles", in *Proc. International Micro Air Vehicle conference and competitions 2011 (IMAV 2011)*, 't Harde, The Netherlands, September 12-15, 2011, 2011, IMAV, pp. 138-145.

An Architecture with Integrated Image Processing for Autonomous Micro Aerial Vehicles

Bibtex entry :

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@inproceedings { DFD+11,
  author = { Dernehl, Christian and Franke, Dominik and Diab, Hilal
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