

# Norman Hansen, M.Sc.

## Contact

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Room: 2314

## Thesis

If you are interested in a thesis regarding testing or verification of model-based software in the automotive domain, I'll take time to give you more information about currently available topics. Please ask for an appointment via e-Mail.

## Teaching

### SS2017

[Eingebettete Systeme \(V\)](#)

### WS16/17

[Modellbasiertes Testen & Analyse eingebetteter Software \(S\)](#)

### SS2016

[Einführung in eingebettete Systeme \(V\)](#)

[Modellbasiertes Testen & Analyse eingebetteter Software \(S\)](#)

### WS15/16

[Praktikum Systemprogrammierung - Versuch 4: Externer Speicher \(P\)](#)

[Modellbasiertes Testen & Analyse eingebetteter Software](#) (S)

**SS2015**

[Einführung in eingebettete Systeme](#) (V)

[Praktikum Systemprogrammierung](#) - Versuch 4: Externer Speicher (P)

[Modellbasiertes Testen & Analyse eingebetteter Software](#) (S)

## Office Hours

by appointment

## Publications

[BHK17]

[PDFBIB](#)

Ben Makhlof, I., Hansen, N., and Kowalewski, S., "HyReach: A Reachability Tool for Linear Hybrid Systems Based on Support Functions", in *Proc. ARCH16. 3rd International Workshop on Applied Verification for Continuous and Hybrid Systems / Editors: Goran Frehse and Matthias Althoff*, 2017 in EPiC Series in Computing, pp. 68-79.

## HyReach: A Reachability Tool for Linear Hybrid Systems Based on Support Functions

### Bibtex entry :

```
@inproceedings { BHK17,
  author = { Ben Makhlof, Ibtissem and Hansen, Norman and
    Kowalewski,
      Stefan },
  title = { HyReach: A Reachability Tool for Linear Hybrid Systems
    Based
      on Support Functions },
  booktitle = { ARCH16. 3rd International Workshop on Applied
    Verification
      for Continuous and Hybrid Systems / Editors: Goran Frehse
      and Matthias Althoff },
  pages = { 68-79 },
  series = { EPiC Series in Computing },
  year = { 2017 },
  organization = { 3rd International Workshop on Applied Verification
    for
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Continuous and Hybrid Systems, Vienna (Austria), 2016-04-12
- 2016-04-12 },
typ = { PUB:(DE-HGF)7 },
reportid = { RWTH-CONV-213474 },
cin = { 122810 / 120000 },
url = { https://easychair.org/publications/paper/334327 },
}

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[HWK+17]

[PDFBIB](#)

Hansen, N., Wiechowski, N., Kugler, A., Kowalewski, S., Rambow, T., and Busch, R., "Model-in-the-Loop and Software-in-the-Loop Testing of Closed-Loop Automotive Software with Arttest", in *Proc. Informatik 2017 - Bände I-III : Tagung vom 25.-29. September 2017 in Chemnitz / Maximilian Eibl, Martin Gaedke (Hrsg.)*, Bonn, 2017 in GI-Edition : lecture notes in informatics. Proceedings, Gesellschaft für Informatik, pp. 1537-1549.

## Model-in-the-Loop and Software-in-the-Loop Testing of Closed-Loop Automotive Software with Arttest

### Bibtex entry :

```

@inproceedings { HWK+17,
  author = { Hansen, Norman and Wiechowski, Norbert and Kugler,
Alexander
and Kowalewski, Stefan and Rambow, Thomas and Busch, Rainer },
  title = { Model-in-the-Loop and Software-in-the-Loop Testing of
Closed-Loop Automotive Software with Arttest },
  booktitle = { Informatik 2017 - B{"a"}nde I-III : Tagung vom
25.-29.
September 2017 in Chemnitz / Maximilian Eibl, Martin Gaedke
(Hrsg.) },
  publisher = { Gesellschaft f{"u"}r Informatik },
  pages = { 1537-1549 },
  series = { GI-Edition : lecture notes in informatics. Proceedings
},
  year = { 2017 },
  address = { Bonn },
  organization = { 47. Jahrestagung der Gesellschaft f{"u"}r
Informatik e.V.
(GI), Chemnitz (Germany), 2017-09-25 - 2017-09-29 },
  typ = { PUB:(DE-HGF)7 },
  reportid = { RWTH-CONV-236306 },
  cin = { 122810 / 120000 },
  url = { https://dl.gi.de/handle/20.500.12116/21 },
}

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[WRB+17]

[PDFBIB](#)

Wiechowski, N., Rambow, T., Busch, R., Kugler, A., Hansen, N., and Kowalewski, S., "Arttest - a New Test Environment for Model-Based Software Development", in *Proc. [WCX 17: SAE World*

*Congress Experience* : [April 4-6, 2017, Detroit, Michigan, USA, Cobo Center] / SAE International, [Warrendale, PA], 2017 in SAE technical paper, SAE International, p. 11.

## Arttest - a New Test Environment for Model-Based Software Development

### Bibtex entry :

```
@inproceedings { WRB+17,  
  author = { Wiechowski, Norbert and Rambow, Thomas and Busch, Rainer  
and  
  Kugler, Alexander and Hansen, Norman and Kowalewski, Stefan },  
  title = { Arttest - a New Test Environment for Model-Based Software  
Development },  
  booktitle = { [WCX 17: SAE World Congress Experience] : [April 4-6,  
2017,  
  Detroit, Michigan, USA, Cobo Center] / SAE International },  
  publisher = { SAE International },  
  pages = { 11 Seiten },  
  series = { SAE technical paper },  
  year = { 2017 },  
  address = { [Warrendale, PA] },  
  organization = { SAE World Congress Experience, Detroit, Mich.  
(USA),  
  2017-04-04 - 2017-04-06 },  
  doi = { 10.4271/2017-01-0004 },  
  typ = { PUB:(DE-HGF)7 },  
  reportid = { RWTH-CONV-236304 },  
  cin = { 122810 / 120000 },  
  url = { http://publications.rwth-aachen.de/record/752280 },  
}
```

[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,
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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 },
  year = { 2016 },
  address = { Cham },
  organization = { 21st International Workshop on Formal Methods for
Industrial
Critical Systems, Pisa (Italy), 2016-09-26 - 2016-09-28 },
  doi = { 10.1007/978-3-319-45943-1 },
  typ = { PUB:(DE-HGF)7 },
  reportid = { RWTH-2016-12021 },
  cin = { 122810 / 120000 },
  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 :

```

@inproceedings { DHK16a,
  author = { Dernehl, Christian and Hansen, Norman and Kowalewski,
Stefan },
  title = { Combining Abstract Interpretation with Symbolic Execution
for a Static Value Range Analysis of Block Diagrams },
  booktitle = { 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
K{"u}hn (eds.) },
  publisher = { Springer International Publishing },

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pages = { 137-154 },
series = { Lecture Notes in Computer Science },
year = { 2016 },
address = { Cham },
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International
Conference, Vienna (Austria), 2016-07-04 - 2016-07-08 },
doi = { 10.1007/978-3-319-41591-8 },
typ = { PUB:(DE-HGF)7 },
reportid = { RWTH-2016-12037 },
cin = { 122810 / 120000 },
url = { http://publications.rwth-aachen.de/record/680854 },
}
```

[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 – Wolfenb{"u}ttel, DE), Matthias Riebisch
(Universit{"a}t Hamburg, DE), Bernhard Sch{"a}tz (fortiss
GmbH – M{"u}nchen, 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 },
  cin = { 122810 / 120000 },
  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. f{"u}r Informatik },
  pages = { 1649-1660 },
  volume = { 246 },
  series = { GI-Edition : lecture notes in informatics },
  year = { 2015 },
  address = { [Bonn] },
  organization = { 45. Jahrestagung der Gesellschaft f{"u}r
    Informatik,
    Cottbus (Germany), 2015-09-28 - 2015-10-02 },
  typ = { PUB:(DE-HGF)8 },
  reportid = { RWTH-CONV-207913 },
  cin = { 122810 / 120000 },
  url = { http://publications.rwth-aachen.de/record/573834 },
}
```

[HF13]

[PDFBIB](#)

Hansen, N. and Franke, D., "Reverse Engineering des Windows Phone Process Execution Models"Bonn: Gesellschaft für Informatik e.V., 2013, vol. 12, pp. 83-86.

## Reverse Engineering des Windows Phone Process Execution Models

### Bibtex entry :

```
@inbook { HF13,
  author = { Hansen, Norman and Franke, Dominik },
  title = { Reverse Engineering des Windows Phone Process Execution
    Models },
  booktitle = { Informatiktage 2013 : smart life - dank Informatik ;
    fachwissenschaftlicher Informatik-Kongress 22. und 23.
```

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M{"a"}rz 2013 B-IT Bonn-Aachen International Center for
Information Technology, Bonn / Gesellschaft f{"u"}r
Informatik (Hrsg.). [Red.: Ludger Porada] },
publisher = { Gesellschaft f{"u"}r Informatik e.V. },
pages = { 83-86 },
volume = { 12 },
series = { GI-Edition : lecture notes in informatics },
year = { 2013 },
address = { Bonn },
typ = { PUB:(DE-HGF)8 },
reportid = { RWTH-CONV-204143 },
cin = { 120000 / 122810 },
url = { http://publications.rwth-aachen.de/record/226725 },
}
```

[BHK+12]

[PDFBIB](#)

Brauer, J., Hansen, R. R., Kowalewski, S., Larsen, K. G., and Olesen, M. C., "Adaptable Value-Set Analysis for Low-Level Code", in *Proc. 6th International Workshop on Systems Software Verification (SSV 2011) [Elektronische Ressource] / Hrsg.: Jörg Brauer ; Marco Roveri ; Hendrik Tews, Wadern, 2012 in OASlcs - OpenAccess Series in Informatics, Schloss Dagstuhl - Leibniz-Zentrum für Informatik*, pp. 32-43.

## Adaptable Value-Set Analysis for Low-Level Code

### Bibtex entry :

```
@inproceedings { BHK+12,
  author = { Brauer, J{"o"}rg and Hansen, Rene Rydhof and Kowalewski,
    Stefan and Larsen, Kim G. and Olesen, Mads Chr. },
  title = { Adaptable Value-Set Analysis for Low-Level Code },
  booktitle = { 6th International Workshop on Systems Software
Verification
(SSV 2011) [Elektronische Ressource] / Hrsg.: J{"o"}rg
Brauer ; Marco Roveri ; Hendrik Tews },
  publisher = { Schloss Dagstuhl - Leibniz-Zentrum f{"u"}r Informatik
},
  pages = { 32-43 },
  series = { OASlcs - OpenAccess Series in Informatics },
  year = { 2012 },
  address = { Wadern },
  doi = { 10.4230/OASlcs.SSV.2011.32 },
  typ = { PUB:(DE-HGF)8 },
  reportid = { RWTH-CONV-198838 },
  cin = { 122810 / 120000 },
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}
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Note: [BHK+12] is NO publication of mine and is displayed here because of the inability of the publication-plugin to filter publications by the prename of the authors.

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<https://rtandroid.embedded.rwth-aachen.de/> - **Lehrstuhl Informatik 11 - Embedded Software Laboratory**

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<https://rtandroid.embedded.rwth-aachen.de/doku.php?id=en:lehrstuhl:mitarbeiter:hansen>

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