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Interessen

- Erreichbarkeitsanalyse hybrider Systeme
- Skalierte Fahrzeuge als Versuchsträger für autonomes Fahren

Projekte

- * [Sicherheitsanalyse und Regelung von Fahrzeugkolonnen](#)
- * [Teilnahme am Carolo Cup](#)

Veröffentlichungen

[Dia15]

[PDFBIB](#)

Diab, H., "Experimental validation and mathematical analysis of cooperative vehicles in a platoon", PhD Thesis, Aachen, 2015.

Experimental validation and mathematical analysis of cooperative vehicles in a platoon

Bibtex entry :

```
@phdthesis { Dia15,  
  author = { Diab, Hilal },  
  othercontributors = { Kowalewski, Stefan and Abel, Dirk },  
  title = { Experimental validation and mathematical analysis of  
    cooperative vehicles in a platoon },  
  publisher = { Fachgruppe Informatik, RWTH Aachen University },  
  school = { RWTH Aachen University },  
  pages = { X, 131 S. : Ill., graph. Darst. },  
  series = { Aachener Informatik-Berichte },  
  year = { 2015 },  
  address = { Aachen },
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http://publications.rwth-aachen.de/record/465272/files/465272.pdf },
}

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[BDK13]

[PDFBIB](#)

Ben Makhlof, I., Diab, H., and Kowalewski, S., "Reachability Analysis for Managing Platoons at Intersections", in *Proc. 2013 21st Mediterranean Conference on Control & Automation (MED 2013) : [Platanias], Chania, Crete, Greece, 25 - 28 June 2013 ; [conference proceedings] / [sponsor: Mediterranean Control Association. Technical co-sponsors: IEEE Control Systems Society; IEEE Robotics & Automation Society ... Ed. by Panos Antsaklis ...]. - 1-2, Piscataway, NJ, 2013, IEEE, pp. 1141-1147.*

Reachability Analysis for Managing Platoons at Intersections

Bibtex entry :

```

@inproceedings { BDK13,
  author = { Ben Makhlof, Ibtissem and Diab, Hilal and Kowalewski, Stefan },
  title = { Reachability Analysis for Managing Platoons at Intersections },
  booktitle = { 2013 21st Mediterranean Conference on Control & Automation (MED 2013) : [Platanias], Chania, Crete, Greece, 25 - 28 June 2013 ; [conference proceedings] / [sponsor: Mediterranean Control Association. Technical co-sponsors: IEEE Control Systems Society; IEEE Robotics & Automation Society ... Ed. by Panos Antsaklis ...]. - 1-2 },
  publisher = { IEEE },
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  year = { 2013 },
  address = { Piscataway, NJ },
  doi = { 10.1109/MED.2013.6608864 },
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  url = { http://publications.rwth-aachen.de/record/226951 },
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[HDB+13]

[PDFBIB](#)

Hänsch, P., Diab, H., Ben Makhlof, I., and Kowalewski, S., "Reachability Analysis of Linear Systems with Stepwise Constant Inputs", *Electronic notes in theoretical computer science : ENTCS*, vol. 297, pp. 61-74, 2013

Reachability Analysis of Linear Systems with Stepwise Constant Inputs

Bibtex entry :

```
@article { HDB+13,  
  author = { H{"a}nsch, Paul and Diab, Hilal and Ben Makhlouf,  
  Ibtissem  
  and Kowalewski, Stefan },  
  title = { Reachability Analysis of Linear Systems with Stepwise  
  Constant Inputs },  
  journal = { Electronic notes in theoretical computer science :  
  ENTCS },  
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  pages = { 61-74 },  
  volume = { 297 },  
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  address = { Amsterdam },  
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[BDK12]

[PDFBIB](#)

Ben Makhlouf, I., Diab, H., and Kowalewski, S., "Safety Verification of a Controlled Cooperative Platoon Under Loss of Communication Using Zonotopes", in *Proc. Inproceeding of the 4th IFAC Conference on Analysis and Design of Hybrid Systems (ADHS 12), Eindhoven, NL, 2012*, pp. 333-338.

Safety Verification of a Controlled Cooperative Platoon Under Loss of Communication Using Zonotopes

Bibtex entry :

```
@inproceedings { BDK12,  
  author = { Ben Makhlouf, Ibtissem and Diab, Hilal and Kowalewski,  
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  title = { Safety Verification of a Controlled Cooperative Platoon  
  Under Loss of Communication Using Zonotopes },  
  booktitle = { Inproceeding of the 4th IFAC Conference on Analysis  
  and  
  Design of Hybrid Systems (ADHS 12), Eindhoven, NL },  
  pages = { 333-338 },  
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}
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[DBK12]

[PDFBIB](#)

Diab, H., Ben Makhrouf, I., and Kowalewski, S., "A Platoon of Vehicles Approaching an Intersection: A Testing Platform for Safe Intersections", in *Proc. 2012 15th International IEEE Conference on Intelligent Transportation Systems (ITSC) : 16 - 19 Sept. 2012, Anchorage, Alaska, USA*, Piscataway, NJ, 2012, IEEE, pp. 1918-1923.

A Platoon of Vehicles Approaching an Intersection: A Testing Platform for Safe Intersections

Bibtex entry :

```
@inproceedings { DBK12,
  author = { Diab, Hilal and Ben Makhrouf, Ibtissem and Kowalewski, Stefan },
  title = { A Platoon of Vehicles Approaching an Intersection: A Testing Platform for Safe Intersections },
  booktitle = { 2012 15th International IEEE Conference on Intelligent Transportation Systems (ITSC) : 16 - 19 Sept. 2012, Anchorage, Alaska, USA },
  publisher = { IEEE },
  pages = { 1918-1923 },
  year = { 2012 },
  address = { Piscataway, NJ },
  doi = { 10.1109/ITSC.2012.6338822 },
  typ = { PUB:(DE-HGF)8 },
  reportid = { RWTH-CONV-199932 },
  cin = { 122810 / 120000 },
  url = { http://publications.rwth-aachen.de/record/197725 },
}
```

[RKH+12]

[PDFBIB](#)

Reuter, S., Kowalewski, S., Hauck, E., Diab, H., and Jeschke, S., "Design and implementation of a vehicle dynamics control system by means of torque vectoring for an autonomous vehicle", in *Proc. 2012 IEEE International Conference on Robotics and Biomimetics (ROBIO 2012) : Guangzhou, China, 11 - 14 December 2012 / [sponsored by IEEE Robotics and Automation Society (RAS) ...]*, Piscataway, NJ, 2012, IEEE, pp. 1691-1696.

Design and implementation of a vehicle dynamics

control system by means of torque vectoring for an autonomous vehicle

Bibtex entry :

```
@inproceedings { RKH+12,
  author = { Reuter, Sebastian and Kowalewski, Stefan and Hauck, Eckart
    and Diab, Hilal and Jeschke, Sabina },
  title = { Design and implementation of a vehicle dynamics control
    system by means of torque vectoring for an autonomous
    vehicle },
  booktitle = { 2012 IEEE International Conference on Robotics and
    Biomimetics (ROBIO 2012) : Guangzhou, China, 11 - 14
    December 2012 / [sponsored by IEEE Robotics and Automation
    Society (RAS) ...] },
  publisher = { IEEE },
  pages = { 1691-1696 },
  year = { 2012 },
  address = { Piscataway, NJ },
  doi = { 10.1109/ROBIO.2012.6491211 },
  typ = { PUB:(DE-HGF)8 },
  reportid = { RWTH-CONV-203323 },
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  url = { http://publications.rwth-aachen.de/record/225742 },
}
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[BMH+11]

[PDFBIB](#)

Ben Makhlof, I., Maschuw, J. P., Hänsch, P., Diab, H., Kowalewski, S., and Abel, D., "Safety Verification of a Cooperative Vehicle Platoon with Uncertain Inputs Using Zonotopes", in *Proc. Proceedings of the 18th IFAC World Congress, 2011 : August 28 - September 2, 2011, Università Cattolica del Sacro Cuore, Milano Italy / Ed.: Sergio Bittanti ...*, Milano, Italy, 2011 in IFAC-PapersOnLine, Curran, pp. 9769-9774.

Safety Verification of a Cooperative Vehicle Platoon with Uncertain Inputs Using Zonotopes

Bibtex entry :

```
@inproceedings { BMH+11,
  author = { Ben Makhlof, Ibtissem and Maschuw, Jan P. and
    H{"a"}nsch, Paul and Diab, Hilal and Kowalewski, Stefan and Abel, Dirk },
  title = { Safety Verification of a Cooperative Vehicle Platoon
    with Uncertain Inputs Using Zonotopes },
  booktitle = { Proceedings of the 18th IFAC World Congress, 2011 :
    August
    28 - September 2, 2011, Università Cattolica del Sacro
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    Cuore, Milano Italy / Ed.: Sergio Bittanti ... },
    publisher = { Curran },
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    doi = { 10.3182/20110828-6-IT-1002.02165 },
    typ = { PUB:(DE-HGF)8 },
    reportid = { RWTH-CONV-173769 },
    cin = { 120000 / 122810 },
    url = { http://publications.rwth-aachen.de/record/100991 },
}

```

[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 :

```

@inproceedings { DFD+11,
    author = { Dernehl, Christian and Franke, Dominik and Diab, Hilal
and
    Kowalewski, Stefan },
    title = { An Architecture with Integrated Image Processing for
Autonomous Micro Aerial Vehicles },
    booktitle = { International Micro Air Vehicle conference and
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    2011 (IMAV 2011), 't Harde, The Netherlands, September
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    publisher = { IMAV },
    pages = { 138-145 },
    year = { 2011 },
    doi = { 10.4233/uuid:19adedb6-e3d9-4cff-8ebc-6497b026adfe },
    typ = { PUB:(DE-HGF)8 },
    reportid = { RWTH-CONV-198392 },
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    url = { http://publications.rwth-aachen.de/record/128268 },
}

```

[MDA+11]

[PDFBIB](#)

Maschuw, J. P., Diab, H., Abel, D., and Kowalewski, S., "Control Design for Generalized Platoon Problems", *Automatisierungstechnik : at*, vol. 59, iss. 12, pp. 721-729, 2011

Control Design for Generalized Platoon Problems

Bibtex entry :

```
@article { MDA+11,
  author = { Maschuw, Jan P. and Diab, Hilal and Abel, Dirk and
            Kowalewski, Stefan },
  title = { Control Design for Generalized Platoon Problems },
  journal = { Automatisierungstechnik : at },
  publisher = { Oldenbourg },
  pages = { 721-729 },
  volume = { 59 },
  number = { 12 },
  year = { 2011 },
  address = { M{"u"}nchen },
  issn = { 0178-2312 },
  doi = { 10.1524/auto2011.0965 },
  typ = { PUB:(DE-HGF)16 },
  reportid = { RWTH-CONV-043232 },
  cin = { 120000 / 122810 },
  url = { http://publications.rwth-aachen.de/record/165377 },
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[CBD+10]

[PDFBIB](#)

Chávez Grunewald, M. G., Ben Makhlof, I., Diab, H., Abel, D., and Kowalewski, S., "On the Effects of Network Delays on an Energy-based Controller", , TuPO11.1, 2010.

On the Effects of Network Delays on an Energy-based Controller

Bibtex entry :

```
@techreport { CBD+10,
  author = { Chávez Grunewald, Martin Guillermo and Ben Makhlof,
            Ibtissem and Diab, Hilal and Abel, Dirk and Kowalewski,
            Stefan },
  title = { On the Effects of Network Delays on an Energy-based
            Controller },
  booktitle = { NecSys'10 : 2nd IFAC Workshop on Distributed
            Estimation and
            Control in Networked Systems ; 13-14 September, 2010, Centre
            de Congrès de L'Impérial Palace, Annecy, France },
  pages = { 169-174 },
  number = { TuPO11.1 },
  year = { 2010 },
  typ = { PUB:(DE-HGF)8 },
  reportid = { RWTH-CONV-009571 },
  cin = { 122810 / 416610 / 120000 },
  url = { http://publications.rwth-aachen.de/record/118448 },
}
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[CBD+10a]

[PDFBIB](#)

Chávez Grunewald, M. G., Ben Makhlouf, I., Diab, H., Mut, V., Kowalewski, S., and Abel, D., "Regelung und Sicherheitsanalyse einer Gruppe Massenpunktfahrzeuge mit Hilfe energiebasierter Methoden", in *Proc. Automatisierungstechnik : at*, München, 2010, vol. 58, Oldenbourg, pp. 227-235.

Regelung und Sicherheitsanalyse einer Gruppe Massenpunktfahrzeuge mit Hilfe energiebasierter Methoden

Bibtex entry :

```
@inproceedings { CBD+10a,
  author = { Chávez Grunewald, Martin Guillermo and Ben Makhlouf,
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  title = { Regelung und Sicherheitsanalyse einer Gruppe
    Massenpunktfahrzeuge mit Hilfe energiebasierter Methoden },
  booktitle = { Automatisierungstechnik : at },
  publisher = { Oldenbourg },
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[DCB+10]

[PDFBIB](#)

Diab, H., Chávez Grunewald, M. G., Ben Makhlouf, I., Abel, D., and Kowalewski, S., "A testing platform for cooperative vehicle platoon controllers", in *Proc. 13th International IEEE Conference on Intelligent Transportation Systems : ITSC 2010 ; 19 - 22 September, 2010, Madeira Island, Portugal ; conference proceedings / IEEE*, Piscataway, NJ, 2010, IEEE, pp. 1718-1723.

A testing platform for cooperative vehicle platoon controllers

Bibtex entry :

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@inproceedings { DCB+10,
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```

author = { Diab, Hilal and Chávez Grunewald, Martin Guillermo and
Ben
Makhlouf, Ibtissem and Abel, Dirk and Kowalewski, Stefan },
title = { A testing platform for cooperative vehicle platoon
controllers },
booktitle = { 13th International IEEE Conference on Intelligent
Transportation Systems : ITSC 2010 ; 19 - 22 September,
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url = { http://publications.rwth-aachen.de/record/118439 },
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[DBK+09]

PDFBIB

Diab, H., Ben Makhlouf, I., Kowalewski, S., Chávez, M., and Abel, D., "Control and Safety Analysis of a Platoon under Communication Constraints", in *Proc. NE[S/T]COC, Sept. 28/29, Stuttgart, Priority Program 1305 Posters S.5*, 2009, pp. 70-71.

Control and Safety Analysis of a Platoon under Communication Constraints

Bibtex entry :

```

@inproceedings { DBK+09,
author = { Diab, Hilal and Ben Makhlouf, Ibtissem and Kowalewski,
Stefan and Chávez, Martin and Abel, Dirk },
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Constraints },
booktitle = { NE[S/T]COC, Sept. 28/29, Stuttgart, Priority
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Posters S.5 },
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year = { 2009 },
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Abschlussarbeiten

- * Sichere Überquerung einer Kreuzung mit einer Fahrzeugkolonne
- * Effiziente Überquerung einer ampelgesteuerten Kreuzung mit einer Fahrzeugkolonne
- * [Unterstützung eines fahrzeuginternen Ortungssystems durch Sensorfusion](#)

Lehre

- Wintersemester 2011/2012
 - [Praktikum Systemprogrammierung](#)
- Sommersemester 2011
 - [Praktikum Systemprogrammierung](#)
 - [Entwicklung NXT gesteuerter LEGO-Fahrzeuge mit Java](#)
- Wintersemester 2010/2011
 - [Hardwarenahe Programmierung](#)
- Sommersemester 2010
 - [Automatisierungssoftware](#)
- Wintersemester 2009/2010
 - [Einführung in die Technische Informatik](#)

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