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Research

As a member of the [Cyber-physical Mobility Group](#) I am researching automotive-grade service-oriented software architectures in the context of the [UNICARagil](#) project.

Bachelor/Master Thesis

If you are interested in a Bachelor's or Master's thesis, please contact me by e-mail. Your own suggestions are also possible.

Open HiWi/WiHi Positions

Current vacancies can be found [here](#). Unsolicited applications are also welcome. Applications should include the following a grade overview and a short CV.

Patents

- [Methods and systems for opening of a vehicle access point using audio or video data associated with a user](#)
- [Passenger tracking systems and methods](#)
- [Inductive loop detection systems and methods](#)
- [Pedestrian detection when a vehicle is reversing](#)
- [Sinkhole detection systems and methods](#)
- [Detecting hazards in anticipation of opening vehicle doors](#)
- [Rear camera stub detection](#)
- [Accident attenuation systems and methods](#)
- [Lane detection systems and methods](#)
- [Vehicle localization using cameras](#)

Publications

[MKA+20]

PDFBIB

Mokhtarian, A., Kampmann, A., Alrifaae, B., Kowalewski, S., Lampe, B., and Eckstein, L., "Agile Requirement Engineering for a Cloud System for Automated and Networked Vehicles", in *Proc. Schloss Dagstuhl--Leibniz-Zentrum für Informatik*, Dagstuhl, Germany, 2020 in OpenAccess Series in Informatics (OASICS), Schloss Dagstuhl - Leibniz-Zentrum für Informatik, p. 4:1-4:8.

Agile Requirement Engineering for a Cloud System for Automated and Networked Vehicles

Bibtex entry :

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@inproceedings { MKA+20,
  author = { Mokhtarian, Armin and Kampmann, Alexandru and Alrifaae, Bassam and Kowalewski, Stefan and Lampe, Bastian and Eckstein, Lutz },
  title = { Agile Requirement Engineering for a Cloud System for Automated and Networked Vehicles },
  booktitle = { Schloss Dagstuhl--Leibniz-Zentrum für Informatik },
  publisher = { Schloss Dagstuhl - Leibniz-Zentrum für Informatik
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  organization = { 2nd International Workshop on Autonomous Systems
Design,
  Grenoble (France), 2020-03-12 - 2020-03-13 },
  doi = { 10.4230/OASICs.ASD.2020.4 },
  typ = { PUB:(DE-HGF)7 },
  reportid = { RWTH-2020-08417 },
  cin = { 122810 / 120000 },
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[KAK+19]

[PDFBIB](#)

Kampmann, A., Alrifaae, B., Kohout, M., Wüstenberg, A., Woopen, T., Nolte, M., Eckstein, L., and Kowalewski, S., "A Dynamic Service-Oriented Software Architecture for Highly Automated Vehicles", in *Proc. The 2019 IEEE Intelligent Transportation Systems Conference - ITSC : Auckland, New Zealand, 27-30 October 2019 / IEEE, IEEE-ITSC 2019, ITSS - IEEE Intelligent Transportation Systems Society*, Piscataway, NJ, 2019, IEEE, pp. 2101-2108.

A Dynamic Service-Oriented Software Architecture for Highly Automated Vehicles

Bibtex entry :

```

@inproceedings { KAK+19,
  author = { Kampmann, Alexandru and Alrifaae, Bassam and Kohout,
Markus
    and W{"u}stenberg, Andreas and Woopen, Timo and Nolte,
    Marcus and Eckstein, Lutz and Kowalewski, Stefan },
  title = { A Dynamic Service-Oriented Software Architecture for
Highly
    Automated Vehicles },
  booktitle = { The 2019 IEEE Intelligent Transportation Systems
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    - ITSC : Auckland, New Zealand, 27-30 October 2019 / IEEE,
    IEEE-ITSC 2019, ITSS - IEEE Intelligent Transportation
    Systems Society },
  publisher = { IEEE },
  pages = { 2101-2108 },
  year = { 2019 },
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  typ = { PUB:(DE-HGF)7 },
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url = { http://publications.rwth-aachen.de/record/773699 },  
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[KNR+19]

[PDFBIB](#)

Keilhoff, D., Niedballa, D., Reuss, H., Buchholz, M., Gies, F., Dietmayer, K., Lauer, M., Stiller, C., Ackermann, S., Winner, H., Kampmann, A., Alrifaae, B., Kowalewski, S., Klein, F., Struth, M. M., Woopen, T., and Eckstein, L., "UNICARagil - New architectures for disruptive vehicle concepts", in *Proc. 19. Internationales Stuttgarter Symposium : Automobil- und Motorentechnik / herausgegeben von Michael Bargende, Hans-Christian Reuss, Andreas Wagner, Jochen Wiedemann*, Wiesbaden, 2019 in Proceedings Springer eBooks, Springer Fachmedien Wiesbaden, pp. 830-842.

UNICARagil - New architectures for disruptive vehicle concepts

Bibtex entry :

```
@inproceedings { KNR+19,  
  author = { Keilhoff, Dan and Niedballa, Dennis and Reuss,  
    Hans-Christian and Buchholz, Michael and Gies, Fabian and  
    Dietmayer, Klaus and Lauer, Martin and Stiller, Christoph  
    and Ackermann, Stefan and Winner, Hermann and Kampmann,  
    Alexandru and Alrifaae, Bassam and Kowalewski, Stefan and  
    Klein, Fabian and Struth, Michael Manfred and Woopen, Timo  
    and Eckstein, Lutz },  
  title = { UNICARagil - New architectures for disruptive vehicle  
    concepts },  
  booktitle = { 19. Internationales Stuttgarter Symposium :  
Automobil- und  
    Motorentechnik / herausgegeben von Michael Bargende,  
    Hans-Christian Reuss, Andreas Wagner, Jochen Wiedemann },  
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Automobil- und  
    Motorentechnik, Stuttgart (Germany), 2019-03-19 - 2019-03-20 },  
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[KWA+19]

[PDFBIB](#)

Kampmann, A., Wüstenberg, A., Alrifaae, B., and Kowalewski, S., "A Portable Implementation of the Real-Time Publish-Subscribe Protocol for Microcontrollers in Distributed Robotic Applications", in *Proc. The 2019 IEEE Intelligent Transportation Systems Conference - ITSC : Auckland, New Zealand, 27-30 October 2019 / IEEE, IEEE-ITSC 2019, ITSS - IEEE Intelligent Transportation Systems Society*, Piscataway, NJ, 2019, IEEE, pp. 443-448.

A Portable Implementation of the Real-Time Publish-Subscribe Protocol for Microcontrollers in Distributed Robotic Applications

Bibtex entry :

```
@inproceedings { KWA+19,
  author = { Kampmann, Alexandru and W{\u}stenberg, Andreas and
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  title = { A Portable Implementation of the Real-Time Publish-
  Subscribe
    Protocol for Microcontrollers in Distributed Robotic
    Applications },
  booktitle = { The 2019 IEEE Intelligent Transportation Systems
  Conference
    - ITSC : Auckland, New Zealand, 27-30 October 2019 / IEEE,
    IEEE-ITSC 2019, ITSS - IEEE Intelligent Transportation
    Systems Society },
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  pages = { 443-448 },
  year = { 2019 },
  address = { Piscataway, NJ },
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  url = { http://publications.rwth-aachen.de/record/773701 },
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[WLB+18]

[PDFBIB](#)

Woopen, T., Lampe, B., Böddeker, T., Eckstein, L., Kampmann, A., Alrifaae, B., Kowalewski, S., Moormann, D., Stolte, T., Jatzkowski, I., Maurer, M., Möstl, M., Ernst, R., Ackermann, S., Amersbach, C., Winner, H., Püllen, D., Katzenbeisser, S., Leinen, S., Becker, M., Stiller, C., Furmans, K., Bengler, K., Diermeyer, F., Lienkamp, M., Keilhoff, D., Reuss, H., Buchholz, M., Dietmayer, K., Lategahn, H., Siepenkötter, N., Elbs, M., v. Hinüber, E., Dupuis, M., and Hecker, C., "UNICARagil - Disruptive Modular Architectures for Agile, Automated Vehicle Concepts", in *Proc. 27. Aachen Colloquium Automobile and Engine Technology : October 8th-10th, 2018, Eurogress Aachen, Germany / scientific management: Univ.-Prof. Dr.-Ing. Lutz Eckstein, Univ.-Prof. Dr.-Ing. Stefan Pischinger ; organizational management: Benedikt Hammermüller (M. Sc.), Dipl.-Ing. Rainer Wolsfeld ; organized by: Institute for Automotive Engineering (RWTH Aachen),*

Institute for Combustion Engines (RWTH Aachen), Aachen, 2018, Institute for Automotive Engineering, RWTH Aachen ; Aachen : Institute for Combustion Engines, RWTH Aachen, pp. 663-694.

UNICARagil - Disruptive Modular Architectures for Agile, Automated Vehicle Concepts

Bibtex entry :

```
@inproceedings { WLB+18,
  author = { Woopen, Timo and Lampe, Bastian and B{"o}ddeker, Torben
and
  Eckstein, Lutz and Kampmann, Alexandru and Alrifaae, Bassam
and Kowalewski, Stefan and Moormann, Dieter and Stolte,
Torben and Jatzkowski, Inga and Maurer, Markus and
M{"o}stl, Mischa and Ernst, Rolf and Ackermann, Stefan and
Amersbach, Christian and Winner, Hermann and P{"u}llen,
Dominik and Katzenbeisser, Stefan and Leinen, Stefan and
Becker, Matthias and Stiller, Christoph and Furmans, Kai and
Bengler, Klaus and Diermeyer, Frank and Lienkamp, Markus and
Keilhoff, Dan and Reuss, Hans-Christian and Buchholz,
Michael and Dietmayer, Klaus and Lategahn, Henning and
Siepenk{"o}tter, Norbert and Elbs, Martin and v.
Hin{"u}ber, Edgar and Dupuis, Marius and Hecker, Christian },
  title = { UNICARagil - Disruptive Modular Architectures for Agile,
Automated Vehicle Concepts },
  booktitle = { 27. Aachen Colloquium Automobile and Engine
Technology :
  October 8th-10th, 2018, Eurogress Aachen, Germany /
scientific management: Univ.-Prof. Dr.-Ing. Lutz Eckstein,
Univ.-Prof. Dr.-Ing. Stefan Pischinger ; organizational
management: Benedikt Hammerm{"u}ller (M. Sc.), Dipl.-Ing.
Rainer Wolsfeld ; organized by: Institute for Automotive
Engineering (RWTH Aachen), Institute for Combustion Engines
(RWTH Aachen) },
  publisher = { Institute for Automotive Engineering, RWTH Aachen ;
Aachen :
  Institute for Combustion Engines, RWTH Aachen },
  pages = { 663-694 },
  year = { 2018 },
  address = { Aachen },
  organization = { 27th Aachen Colloquium Automobile and Engine
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  2018, Aachen (Germany), 2018-10-08 - 2018-10-10 },
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[KGK17]

[PDFBIB](#)

Kalkov, I., Gurchian, A., and Kowalewski, S., "Explicit prioritization of parallel Intent broadcasts in real-time Android", in *Proc. Concurrency and computation*, Chichester, 2017, vol. 29, Wiley.

Explicit prioritization of parallel Intent broadcasts in real-time Android

Bibtex entry :

```
@inproceedings { KGK17,
  author = { Kalkov, Igor and Gurchian, Alexandru and Kowalewski,
    Stefan },
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    real-time Android },
  booktitle = { Concurrency and computation },
  publisher = { Wiley },
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  address = { Chichester },
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for
  Real-Time and Embedded systems, Niagara Falls, NY (USA),
  2014-10-13 - 2014-10-14 },
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  cin = { 122810 / 120000 },
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}
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[KGK15]

[PDFBIB](#)

Kalkov, I., Gurchian, A., and Kowalewski, S., "Priority Inheritance during Remote Procedure Calls in Real-Time Android using Extended Binder Framework", in *Proc. Proceedings of the 13th International Workshop on Java Technologies for Real-time and Embedded Systems - JTRES '15 - ACM Press New York, New York, USA, 2015*, 2015, ACM Press New York, New York, USA, p. 5.

Priority Inheritance during Remote Procedure Calls in Real-Time Android using Extended Binder Framework

Bibtex entry :

```
@inproceedings { KGK15,
  author = { Kalkov, Igor and Gurghian, Alexandru and Kowalewski,
Stefan },
  title = { Priority Inheritance during Remote Procedure Calls in
Real-Time Android using Extended Binder Framework },
  booktitle = { Proceedings of the 13th International Workshop on
Java
Technologies for Real-time and Embedded Systems - JTRES '15
- ACM Press New York, New York, USA, 2015 },
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  pages = { 5, 10 Seiten },
  year = { 2015 },
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Real-time and Embedded Systems, Paris (France), 2015-10-07
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  cin = { 122810 / 120000 },
  url = { http://publications.rwth-aachen.de/record/573802 },
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```

[KGK14]

[PDFBIB](#)

Kalkov, I., Gurghian, A., and Kowalewski, S., "Predictable Broadcasting of Parallel Intents in Real-Time Android" New York, New York: ACM, 2014, pp. 57-66.

Predictable Broadcasting of Parallel Intents in Real-Time Android

Bibtex entry :

```
@inbook { KGK14,
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cin = { 120000 / 122810 },
url = { http://publications.embedded.rwth-aachen.de/file/5g },
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<https://www.embedded.rwth-aachen.de/doku.php?id=en:lehrstuhl:mitarbeiter:gurghian>

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