

# Martin Schweigler, M.Sc. RWTH

## Kontakt



Wissenschaftlicher Mitarbeiter

Tel.: +49 241 80 21170

Fax: +49 241 80 22150

E-Mail: [schweigler\[at\]embedded\[dot\]rwth-aachen\[dot\]de](mailto:schweigler[at]embedded[dot]rwth-aachen[dot]de)

Adresse: Ahornstr. 55, 52074 Aachen, Germany

Büro: Raum 2302(Gebäude H, 3. OG)

## Abschlussarbeiten

Im Rahmen meiner Forschungstätigkeit ergeben sich kontinuierlich Themen für Abschlussarbeiten. Bei Interesse bitte ich um Kontaktaufnahme per E-Mail oder persönlich bei mir im Büro.

## Laufend

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## Abgeschlossen

- [A GPS-aided Inertial Navigation System for Pedelecs](#)
- [Enhanced Pedelec Odometry supported by Acceleration Measurement](#)
- [Concept and Implementation of a Real-Time Lane Position Estimation System with Side Cameras using Deep Learning Algorithms for Autonomous Vehicles](#)
- [Balance Point dependent Vehicle Dynamics Control](#)
- [Tethering semi-autonomous Vehicles by relative Positioning](#)

- Enhanced GPS positioning using a smartphone IMU and odometer
- Development of a communication unit to control a pedelec
- Ground surface pattern recognition for enhanced positioning

## Lehre

SS2017

- Cyber-Physische Systeme in Medizintechnik und Mobilität (S)

WS2017/18:

- Dynamic Systems for Computer Scientists (V)
- Cyber-Physische Systeme in Medizintechnik und Mobilität (S)

SS2017

- Eingebettete Software in Medizintechnik & eMobilität (S)

WS2016/17:

- Dynamic Systems for Computer Scientists (V)
- Eingebettete Software in Medizintechnik & eMobilität (S)

SS2016:

- Eingebettete Software in Medizintechnik & eMobilität (S)

WS2015/16:

- Dynamic Systems for Computer Scientists (V)
- Eingebettete Signalverarbeitung in Medizintechnik & eMobilität (S)

SS2015:

- Eingebettete Signalverarbeitung in Medizintechnik & eMobilität (S)

WS2014/15:

- Dynamic Systems for Computer Scientists (V)
- Entwicklung von Fahrerinformationssystemen mit Android und OpenXC (P)
- Ausgesuchte Themen zur Eingebetteten Software (S)

SS2014:

- NXT-Programmierung mit Java (P)

## Projekte und Ausschüsse

- Projektingenieur der Fordglobal Mobility chalange 2016

- [Projektingenieur Echtzeit Demonstrator 2015](#)
- [Mitarbeit im Projekt Velocity Aachen 2015-2016](#)
- [Betreuer des Carolo-Cup Teams 2015-2017](#)
- [Mitarbeit im Profilbereich Mobility & Transport Engineering 2014-2015](#)
- [Mitarbeit im Projekt Future Mobility Lab 2014-2017](#)
- [Mitglied im Prüfungsausschus Automatisierungstechnik 2013-2017](#)

## Patente

- Elektrisch angetriebene Transportvorrichtung für wenigstens eine Person sowie Steuerungsverfahren hierfür (102016217804.0, 16.09.2016)
- Transportsystem mit automatischer Folgefunktion sowie Steuerungsverfahren (102016217805.9, 16.09.2016)
- Verfahren zur Vortriebssteuerung eines dreispurigen Fahrzeugs sowie Fahrzeug (102016221367.9, 28.10.2016)
- Fahrzeug mit elektromotorisch angetriebenen Rädern und Verfahren zum Lenken desselben (102016221366.0, 28.10.2016)
- Tethering of a Semi-Autonomous Vehicle (83866252, 03.08.2017)
- Conveying System with an Automatic Tethering Function (FMC 8418 PUSA, 14.09.2017)

## Publikationen

[GSA+18]

[PDFBIB](#)

Grochowski, M., Schweigler, M., Alrifaae, B., and Kowalewski, S., "A GPS-aided Inertial Navigation System for Vehicular Navigation using a Smartphone", *IFAC-PapersOnLine*, vol. 51, iss. 10, pp. 121-126, 2018

### **A GPS-aided Inertial Navigation System for Vehicular Navigation using a Smartphone**

#### **Bibtex entry :**

```
@article { GSA+18,
  author = { Grochowski, Marco and Schweigler, Martin and Alrifaae,
    Bassam and Kowalewski, Stefan },
  title = { A GPS-aided Inertial Navigation System for Vehicular
    Navigation using a Smartphone },
  journal = { IFAC-PapersOnLine },
  pages = { 121-126 },
  volume = { 51 },
  number = { 10 },
  year = { 2018 },
  address = { Laxenburg },
  issn = { 2405-8963 },
  organization = { 3rd IFAC Conference on Embedded Systems,
    Computational
```

```
Intelligence and Telematics in Control, Farod (Portugal),  
2018-06-06 - 2018-06-08 },  
doi = { 10.1016/j.ifacol.2018.06.247 },  
typ = { PUB:(DE-HGF)16 },  
reportid = { RWTH-2018-227583 },  
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url = { http://publications.rwth-aachen.de/record/731577 },  
}
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[SGT+18]

[PDFBIB](#)

Schweigler, M., Grochowski, M., Tamrakar, S., and Kowalewski, S., "Ground Surface Pattern Recognition with Hidden Markov Models for Low Cost Positioning Improvement", in *Proc. 8th International Conference on Pattern Recognition Systems (ICPRS 2017) : 11-13 July 2017*, [Stevenage], 2018, IET, pp. 1-6.

## Ground Surface Pattern Recognition with Hidden Markov Models for Low Cost Positioning Improvement

### Bibtex entry :

```
@inproceedings { SGT+18,  
  author = { Schweigler, Martin and Grochowski, Marco and Tamrakar,  
  Sujan  
  and Kowalewski, Stefan },  
  title = { Ground Surface Pattern Recognition with Hidden Markov  
  Models  
  for Low Cost Positioning Improvement },  
  booktitle = { 8th International Conference on Pattern Recognition  
  Systems  
  (ICPRS 2017) : 11-13 July 2017 },  
  publisher = { IET },  
  pages = { 1-6 },  
  year = { 2018 },  
  address = { [Stevenage] },  
  organization = { 8th International Conference of Pattern  
  Recognition Systems,  
  Madrid (Spain), 2017-07-11 - 2017-07-13 },  
  doi = { 10.1049/cp.2017.0166 },  
  typ = { PUB:(DE-HGF)7 },  
  reportid = { RWTH-CONV-236283 },  
  cin = { 122810 / 120000 },  
  url = { http://publications.rwth-aachen.de/record/752258 },  
}
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[KBS+17]

[PDFBIB](#)

Kühn, J., Brendle, C., Stollenwerk, A., Schweigler, M., Kowalewski, S., Janisch, T., Rossaint, R., Leonhardt, S., Walter, M., and Kopp, R., "Decentralized safety concept for closed-loop controlled intensive care : Supervision of a blood pump during extracorporeal circulation", *Biomedizinische*

*Technik*, vol. 62, iss. 2, pp. 213-224, 2017

## **Decentralized safety concept for closed-loop controlled intensive care : Supervision of a blood pump during extracorporeal circulation**

### **Bibtex entry :**

```
@article { KBS+17,
  author = { K{"u}hn, Jan and Brendle, Christian and Stollenwerk,
  André
    and Schweigler, Martin and Kowalewski, Stefan and Janisch,
    Thorsten and Rossaint, Rolf and Leonhardt, Steffen and
    Walter, Marian and Kopp, R{"u}dger },
  title = { Decentralized safety concept for closed-loop controlled
    intensive care : Supervision of a blood pump during
    extracorporeal circulation },
  journal = { Biomedizinische Technik },
  publisher = { de Gruyter },
  pages = { 213-224 },
  volume = { 62 },
  number = { 2 },
  year = { 2017 },
  address = { Berlin [u.a.] },
  issn = { 1862-278X },
  doi = { 10.1515/bmt-2016-0087 },
  typ = { PUB:(DE-HGF)16 },
  reportid = { RWTH-2017-09486 },
  cin = { 611010 / 122810533000-2533000-3 / 120000533000-3533000-2 },
  url = { http://publications.rwth-aachen.de/record/707857 },
}
```

[TSN+16]

[PDFBIB](#)

Thönnessen, D., Schweigler, M., Ney, O., and Kugelmeier, M., "Conveying system with an automatic tethering function", 2016.

## **Conveying system with an automatic tethering function**

### **Bibtex entry :**

```
@techreport { TSN+16,
  author = { Th{"o}nnessen, David and Schweigler, Martin and Ney,
  Oliver
    and Kugelmeier, Mirko },
  title = { Conveying system with an automatic tethering function },
  pages = { 1-7 },
  year = { 2016 },
  typ = { PUB:(DE-HGF)23 },
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https://depatisnet.dpma.de/DepatisNet/depatisnet?action=bibdat&docid=US  
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Laboratory**

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