

# Extended Curriculum Vitae

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## Personal Information

**Full Name**  
**Place of Birth**  
**Date of Birth**  
**E-Mail**

Martin Frank  
Enkenbach, Germany  
May, the 2nd of 1984  
[martin.frank@volvo.com](mailto:martin.frank@volvo.com)

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## Short summary

Started as a Research Engineer with deep technical responsibility for machine function automation and optimization. Engaged in the exploration and the subsequent development of on-board monitoring systems as well as passive and active operator assistant functions. Promoted to a Volvo CE Technology Specialist to support and drive projects related to machine intelligence and automation globally while sharing knowledge and education colleagues within the global organization. Driving research in the fields of automation, human machine interaction and design research related to the former mentioned areas. In addition, responsible for the exploration initiatives and budget for the area of machine intelligence and user experience as Program Leader within the global Advanced Engineering and Core Technology department. Many responsibility in leading and coordinating internal research and exploration initiatives to create deeper knowledge about the requirements for the design highly automated and autonomous construction equipment.

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## Studies

**Sep 2005 - Oct 2009**

**University of Applied Sciences (FH), Kaiserslautern, Germany**

Course of Studies: Mechanical Engineering

Degree Awarded: Diplom Ingenieur (FH)

Title of Degree Dissertation:

"Development and verification of an analysis algorithms for automated model and knife wear detection at a self-propelled forage harvester"

Created as thesis worker at John Deere Works Zweibrücken, during a 6 month, full time assignment.

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**Professional  
Experience**

**Mar 2018 - present**

**Volvo Construction Equipment Germany GmbH, Konz, Germany**  
*Advanced Engineering Program Leader* for the Machine Intelligence  
and User Experience Program

- Leading a interdisciplinary core team to research and evaluate new ideas in the areas of automation, electric and electronics, controls and user experience.
- Controlling and planning the research and exploration budget
- Develop and maintain Technology roadmaps
- Research and explore new technologies and potential partners

**Jan 2015 - present**

**Volvo Construction Equipment Germany GmbH, Konz, Germany**  
*Volvo CE Technology Specialist for Intelligent and Autonomous  
Machines*

- Role to research and support intelligent feature and machine development within Volvo Construction Equipment
- Establish and maintain research networks in the respective area
- supporting the creation of regional, national and EU research project applications
- Evaluate project results as independent reviewer
- Train and educate executives on internal research, development and external trends
- Active participation in committee work

**Oct 2013 - present**

**Volvo Construction Equipment Germany GmbH, Konz, Germany**  
Emerging Technologies Team within the Advanced Engineering dept.  
*Corporate Liaison* for the ME310 course at BTH & Stanford  
University

- Guiding and coaching the student team
- Research on collaboration tools, team engagement and design research
- Providing and tracking information flow
- Coordination coaching efforts with academia at BTH and Stanford

**Oct 2011 - present**

**Volvo Construction Equipment Germany GmbH, Konz**, Germany  
Emerging Technologies Team within the Advanced Engineering dept.

*Research Engineer Intelligent and Autonomous Machines*

- Exploring of passive and active operator assistant functions
- Development and optimization of the Volvo Smart View system
- Research on construction equipment automation and control
- Maintaining and extending the research network with academia, suppliers and research institutes
- Supervision of thesis workers in the area of automation, rapid control prototyping and new machine concepts
- Volvo CE participant in the research project "Terraforming heavy outdoor Robot - THOR"

<https://agrosy.informatik.uni-kl.de/robots/thor/?L=1>

**Nov 2009 - Sep 2011**

**John Deere Works Zweibrücken, Zweibrücken**, Germany  
Advanced Engineering and Technology Development dept.

*Research Engineer*

- Supporting the development of a condition monitoring system for mobile machinery
- develop algorithms for the automated, decentralized processing of vibration data base on discrete Fourier Transformation
- Exploring new technologies to measure material flow and detect foreign object in the material
- exploring new technologies to detect the knife sharpness of an self-propelled forage harvester in harvest conditions
- Creating and coordination applications for national research projects

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**Recognitions**

**2014**

Awarded with the **Internal Volvo Group Safety Award 2014** for the development and industrialization of the **Volvo Smart View** system

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**Patents**

**2018** (published)

Frank, Martin, inventor; AB Volvo, assignee; "A warning system for a working machine"; Publication number WO2018038654A1;

Publication date: Mar 1, 2018

<https://patents.google.com/patent/WO2018038654A1/en?q=WO2018038654A1>

**2017** (published)

Frank, Martin, inventor; AB Volvo, assignee; “*Control unit for dumping material*” Publication number: WO2017184037A1;

Publication date: Oct 26, 2017

<https://patents.google.com/patent/WO2017184037A1/en?q=WO17184037A1>

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**Further Education**

**2018**

**P61 Modeling, Simulation and Optimization in the Engineering Product Development Process (5HP)**

Provided by the Product Development Academy, Sweden

**2017**

**Design Research Methodology DRM (7.5HP)**

Provided by Blekinge Institute of Technology, Karlskrona

**2017**

**DSN 112 W Design Your Future: Design Innovation for Global Teams (7.5HP)**

Provided by the Stanford University Continuing Studies Program

**2017**

**DSN 111 W Design Your Future: Design Thinking and Foresight Strategy for Businesses and Organizations (7.5HP)**

Provided by the Stanford University Continuing Studies Program

**2016**

**FPGA Basic - based on Xilinx System Generator (1HP)**

Provided by dSpace GmbH, Paderborn, Germany

**2016**

**FPGA Electric Drives - based on Xilinx System Generator (1HP)**

Provided by dSpace GmbH, Paderborn, Germany

**2011**

**Course in “Taktisches Innovationsmanagement” - “Tactical Innovation management” (1.5HP)**

Provided Verein Deutscher Ingenieure e.V. VDI, Munich, Germany

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## Publications

**2018**

**Data Mining through Early Experience Prototyping - a Step towards Data Driven Product Service System Design**

Ruvald, Ryan; Frank, Martin; Johansson, Christian; Larsson, Tobias C.: 16th IFAC Symposium on Information Control Problems in Manufacturing - INCOM18, Bergamo, Italy; 06/2018

<http://www.diva-portal.org/smash/record.jsf?pid=diva2:1216332>

**2016**

**Urban Mining as a Case for PSS**

Johansson, Christian; Elfsberg, Jenny; Larsson, Tobias C; Frank, Martin; Leifer, Larry J; Nilsson, Niklas; Söderberg, Victor; Procedia CIRP 47,p 460-465, Elsevier.

<http://www.diva-portal.org/smash/record.jsf?pid=diva2%3A937762&swid=3412>

**2015**

**Connected Machinery–Enabling Automation**

Frank, Martin; 8th AVL International Commercial Powertrain Conference, p 91-95,2015,"AVL List GmbH, SAE International"

[http://www.academia.edu/download/46529179/ICPC\\_2015-4\\_3\\_Martin\\_Frank\\_Paper.pdf](http://www.academia.edu/download/46529179/ICPC_2015-4_3_Martin_Frank_Paper.pdf)

**2014**

**Closed-Loop Joint Angle Control for a Multi-Axes Hydraulics Arm – Towards Autonomous Construction Machines,**

Hillenbrand, Carsten; Hirth, Jochen; Leroch, Bernd-Helge; Frank, Martin; "3rd Commercial Vehicle Technology Symposium,2014", p 37-46, Shaker

[https://www.tib.eu/en/search/id/tema%3ATEMA20140802401/Closed-Loop-Joint-Angle-Control-for-a-Multi-Axes/?tx\\_tibsearch\\_search%5Bsearchspace%5D=tn](https://www.tib.eu/en/search/id/tema%3ATEMA20140802401/Closed-Loop-Joint-Angle-Control-for-a-Multi-Axes/?tx_tibsearch_search%5Bsearchspace%5D=tn)

**2012**

**Camera-based assistance system to improve the active safety of construction machines,**

Bäumchen, Henning; Bach, Peter; Frank, Martin; "2nd Commercial Vehicle Technology Symposium, 2012", p 231-240, Shaker

<http://d-nb.info/1022223429/04>

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## Committee Activities 2012 - present

Volvo Group Delegate in the Technical Working Group on **Digital Commercial Vehicle Technology**; "Arbeitskreis Digitale Nutzfahrzeug Technologie, DNT" Organized by the Fraunhofer Gesellschaft

### 2012 - present

Volvo Construction Equipment Delegate in the Commercial Vehicle Cluster Südwest (CVC)

- Co-Author of the Commercial Vehicle Roadmap 2030 ([Nutzfahrzeug Roadmap 2030](#))

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## Involvements in 2018

**International Events** Presentation at the: UX Strategy & HMI Development Forum for Non Road Mobile Machinery, Frankfurt, Germany  
Frank, Martin; Title: *Human-Machine Interaction / Human-Robot Interaction*

### 2017

Presentation at the High Level Technical Policy Advisory Group (HLTPAG) of the Committee for European Construction Equipment, Brussels, Belgium  
Frank, Martin; Sjöberg, Kartin; Title: *Cooperative Intelligent Transport Systems C-ITS*

### 2016

Presentation at the 4th Center for Mobile Machinery (CMM) Workshop about Construction Sites 2040, Aachen, Germany  
Faß, Ulrich, Frank, Martin: Title: *Recent Development Trends of Construction Equipment*

### 2015

Keynote at Mobile Machines 2015 - Security and Driverassistance for Mobile Machinery, Karlsruhe, Germany  
Frank, Martin; Titel: *Challenges for the Automation of Construction Equipment*

**2015**

Presentation at the Annual Construction Plant-hire Association (CPA) Conference, Wyboston, United Kingdom

Frank, Martin; Title *Intelligent Machines - Challenges and Opportunities*

**2014**

Presentation at the 2nd VDI Conference on Electric and Electronics for Mobile Machinery, Baden-Baden, Germany

Frank, Martin; Title: *Autonomous Construction Equipment - Vision or Fiction*

**2013**

Presentation at the 4th Workshop on Field and Assistive Robotics, Wadern, Germany

Frank, Martin; Title: *Autonomous Machines - Applications, Challenges and Opportunities*