




# Dr.-Ing. Chandramouli Gnanasambandham

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## Profile

I am a passionately curious engineer with excellent intercultural communication skills. I have been spearheading the development of robust multi-fidelity vehicle models for highly-scalable simulations with over 300 active users in my current organization. Coordination with interdisciplinary, international users takes place across different time zones. Moreover, I have been first author of 6 peer-reviewed journal articles in particle dynamics during my time at the academia, collaborating closely with leading scientific minds. All this was possible, thanks to my exceptional adaptability to rapidly changing environments and my extraordinary analytical and team skills. I am now seeking new opportunities as a Senior Vehicle Dynamics Engineer, where I can leverage my expertise in simulation to contribute to cutting-edge innovations in mobility.

## Languages

■ ■ ■ ■ ■ Proficient | German  
■ ■ ■ ■ ■ Proficient | English  
■ ■ ■ ■ ■ Mother tongue | Tamil  
■ ■ ■ ■ □ Advanced | Hindi

## Web

**LinkedIn**  
[linkedin.com/in/gnanasambandhamc](https://www.linkedin.com/in/gnanasambandhamc)

**GitHub**  
[github.com/chandramouli6890](https://github.com/chandramouli6890)

## Professional Career

### Staff Software Engineer

04/2023 - present

Torc Europe GmbH, Stuttgart

- Spearheaded a team to develop a highly-scalable vehicle model in C++ following Test-Driven Development (TDD) and Object-Oriented Programming (OOP).
- Integrated vehicle models into a Robotic Operating System (ROS) based simulator to enable virtual validation of Level 4 autonomous vehicles.
- Communication and presentation of team results to senior management and within the company.
- Scripting for auto-generating documentation from code based on Git-events.
- Collaborated with external stakeholders to develop a scalable validation strategy for vehicle models as per ISO-26262.

### Vehicle model engineer

08/2021 - 03/2023

Daimler Truck AG, Stuttgart

- Develop multi-fidelity vehicle models for scalable simulations in the context of virtual validation in MATLAB/Simulink
- Developed a co-simulation interface in C++ to couple a high-fidelity multibody truck model and the virtual driver using TCP/IP communication interface.

### Scientific Staff

05/2016 - 04/2021

University of Stuttgart

- Development and administration of the particle simulation software Pasimodo in C++.
- Planning and execution of measurement campaigns of vibrational structures using Laser-Doppler Vibrometry.
- Organisation und assistance for the lecture "Vehicle Dynamics" and supervision of lab workshops

### Intern

10/2015 - 04/2016

Fraunhofer Institute (ITWM), Kaiserslautern

## Awards

### Best Presentation Award 2014

Optimization of Vehicle Parameters based on Lap-Time Simulations using Multiobjective Evolutionary Algorithm

### Best Presentation Award 2015

An Adaptive Approach to Real-Time Estimation of Vehicle Dynamics Parameters using Kalman Filtering

## Other Fun Projects

07/2020 - present

### Raspberry Pi Powered Smart-Home

As part of a on-going hobby project, I have built a versatile Raspberry-Pi smart home network with remote-ssh-access, custom file storage server with automatic backups using `rsync`, Zigbee2Mqtt server for controlling IOT devices using siri/google-nest and custom automations.

06/2015

### Machine Learning Suite

Implementation of a deep convolution neural network for optical character recognition as part of a freelance software project in MATLAB. To increase performance the MEX API was used.

06/2014

### Driver-in-the-Loop Simulator

As part of my work for a formula student racing team, I developed a driver-in-the-loop simulator based on a communication interface between IPG CarMaker and MATLAB/Simulink.

## Educational Qualification

### University of Stuttgart

05/2016 -04/2021

**Ph.D.** in Mech. Eng. (Grade: magna cum laude)

- Dissertation Titel: Particle Dampers - Enhancing Energy Dissipation using Fluid/Solid Interactions and Rigid Obstacle-Grids

### Technical University of Kaiserslautern

10/2012 - 04/2016

**M.Sc.** in Commercial Vehicle Tech. (Grade: 1.9)

### Anna University, Chennai, India

06/2008 - 04/2012

**B.Eng.** in Production Eng. (Grade: 8.3/10)

## Technical Skills

### Programming Languages:

- ■ ■ ■ ■ 12 years | C/C++
- ■ ■ ■ ■ 12 years | MATLAB
- ■ ■ ■ □ 9 years | BASH
- ■ ■ □ □ 6 years | Python

### Operating System:

- ■ ■ ■ ■ Linux (Debian, Ubuntu)
- ■ ■ ■ □ Microsoft Windows

## Simulation and Data Skills:

- MATLAB/Simulink:** Modelling, simulation, numerical optimization, SiL/DiL simulations, MATLAB GUI, FMI
- C/C++:** MEX API, SilverBypass, FMI, ROS, TCP/IP and UDP
- Multibody-Simulation:** LMS Virtual.Lab Motion, Neweul-M<sup>2</sup>, MSC Adams, Project Chrono
- ADAS/AD-Simulation Tools:** Applied Object-Sim, IPG CarMaker
- Multibody-Simulation:** LMS Virtual.Lab Motion, Neweul-M<sup>2</sup>
- Other Software Tools:** Silver Virtual-ECU, COMSOL Multiphysics, OptiSlang, Oracle VM VirtualBox

## Software Development Tools:

- CI Tools:** Git, GitHub Actions, Jenkins, Docker
- Testing Frameworks:** pytest, Google test
- Technologies:** PETSc, EIGEN, OpenGL
- Debuggers/Profilers:** gdb, valgrind, calgrind, Intel VTune

## Selected Publications

**Gnanasambandham, C.;** Fleissner, F.; Eberhard, P.: Enhancing the Dissipative Properties of PDs using Rigid Obstacle-Grids. Journal of Sound and Vibration, 2020.

**Gnanasambandham, C.;** Stender, M.; Hoffmann, N.; Eberhard, P.: Multi-Scale Dynamics of PDs using Wavelets: Extracting Particle Activity Metrics from Ring Down Experiments. Journal of Sound and Vibration, 2019.

Stuttgart, Wednesday 22<sup>nd</sup> January, 2025  
\*scholar.google.com/citations?user=azp3ffYAAAAJhl=de

Dr.-Ing. Chandramouli Gnanasambandham

22: