# CHANDRAMOULI GNANASAMBANDHAM


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## PROFILE

I am an passionately curious engineer with excellent intercultural communication skills. I have been first author of 6 peer-reviewed journal articles and have played a crucial role in several successful research proposals funded by the German Research Foundation (DFG). All this was possible, thanks to my exceptional adaptability to new/rapidly changing environments and my extraordinary analytical, project management and team working skills gained through my time at the academia. I am looking for a challenging oportunity as a software architecht, prefarrably in the field of autonomous driving, machine learning and artificial intelligence.

## LANGUAGES

- ■■■■■ Proficient | German
- ■■■■■ Proficient | English
- ■■■■■ Mother tounge | Tamil
- ■■■■□ Advanced | Hindi

## WEB

**GITHUB**
https://github.com/chandramouli6890

**Linkedin**
https://linkedin.com/in/gnanasambandhamc

**Medium**
https://chandramoulig.medium.com

**Matlab**
MatlabCentral Profil

## TECHNICAL SKILLS

**Programming Languages:**

- ■■■■■ 8 years | C/C++
- ■■■■■ 8 years | Matlab
- ■■■■□ 5 years | BASH
- ■■■□□ 3 years | Python

**Betriebssystem**

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

**Software Skills:**

- **Matlab/Simulink:** Modelling, simulation, numerical optimization, C/C++ MEX API, SiL/HiL simulations
- **Python:** Flask, NumPy, SciPy, Pandas
- **Multibody-Simulation:** LMS Virtual.Lab Motion, Neweul-M$^2$, MSC Adams, Project Chrono
- **Data Visualization:** Paraview, PlotlyDash, Matplotlib, Matlab
- **Other Software:** COMSOL Multiphysics, OpenSCAD, Blender with Python scripting, OptiSlang

**Software Development Tools:**

- **Technologies:** CUDA GPU Programming, PETSc, EIGEN, Object Oriented Programing (OOP), OpenGL
- **Version control:** Gitlab, Github, Gitflow Branching-Model
- **Development Environments:** `vim`, Visual-Studio Code, Eclipse
- **Debuggers/Profilers:** `gdb`, `valgrind`, `calgrind`, Intel VTune

## PROFESSIONAL CAREER

April 2021
**Submission of the doctoral thesis**
Particle Dampers- Enhancing Energy Dissipation using Fluid/Solid Interactions and Rigid Obstacle-Grids

- Tentative date of the PhD thesis defence: **13.07.2021**

## AWARDS

**Best Presentation Award**
Title: Optimization of Vehicle Parameters based on Lap-Time Simulations using Multi-objective Evolutionary Algorithm

This award was offered by ALTEN GmbH in the year 2015 and was endowed with **500€**.

**Best Presentation Award**
Title: An Adaptive Approach to Real-Time Estimation of Vehicle Dynamics Parameters using Kalman Filtering

This award was offered by ALTEN GmbH in the year 2014 and was endowed with **500€**.

## SONSTIGE PROJEKTE

Juni 2014
**Driver-in-the-Loop Simulator**
As part of my work for the KaRaT Formula Student racing team, I have developed a driver-in-the-loop simulator based on a communication interface between IPG CarMaker and Matlab/Simulink.

Juni 2015
**Machine Learning Suite**
Implementation of a Deep Convolution Neural Network (Deep ConvNet) for optical character recognition as part of a freelance software project. To increase performance the Matlab MEX API was used.

Juli 2020
**Raspberry Pi NAS**
As part of a hobby project I had built a versatile Raspberry-Pi home network storage (NAS) device with multiple functions, for e.g. remote-ssh-access over the internet, automatic backups using `rsync`, DNS-server with integrated Pi-Hole ad-blocker and HomeBridge server for controlling IOT devices using siri.

## PROFESSIONAL CAREER (CONTINUED)

May 2016 - April 2021
**University of Stuttgart**
Scientific staff member at the Institute for Engineering and Computational Mechanics (ITM)

- Main research areas:
  - Modelling and simulation of particle dampers with meshfree Lagrangian methods
  - Systematic investigation of underlying dissipation mechanisms in particle dampers
- Planning and execution of measurement campagins of vibrating structures using the priniciples of experimental modal analysis and laser doppler vibrometry
- Development und administration of the particle simulation package **Pasimodo** in **C++**:
  - Developent and implementation of efficient algorithms to adequately predict the dynamics of fluid-solid systems
  - Administration of bug-reports und merge-requests in Gitlab
  - Maintaining and developing of the nightly Build-System using the principles of continuous integration (CI)
  - Maintaining the distributed **C++** compilation system using distcc
  - Administration and development of software releases at regular intervals using the Gitflow Branching-Model
- Teaching activities:
  - Organisation und assitance for the lecture “Ground Vehicle Dynamics”
  - Execution of lab workshops for B.Sc. and M.Sc. students
  - Supervision of Bachelor- and Master-Thesis students

October 2015 - April 2016
**Fraunhofer Institute of Industrial Mathematics (ITWM), Kaiserslautern**
Student Employment

- Implementaion of a POD based model order reduction method for high-dimensional nonlinear finite element systems

October 2014 - September 2015
**Daimler AG, Böblingen**
Internship und Student Employment in the department of Predeveolpment Suspension

- Entwurf und Entwicklung einer parametrischen Kennlinie zur automatisierten Elastomerlageroptimierung in der Gesamtfahrzeugsimulation mit Hilfe des Programms **optiSLang**
- Entwicklung eines Verfahrens zur Überführung von Steifigkeitshysteresen in abgeleitete Kennlinie anhand Curve-Fitting Verfahren in **Python**
- Erstellung eines Programms in einem vorhandene Matlab-Workflow zur automatisierten Änderung von Gummilagerkennlinie

## PROFESSIONAL CAREER (CONTINUED)

December 2013 - September 2014

**German Research Center for Artificial Intelligence (DFKI), Kaiserslautern**

Junior Software Developer in the department of Embedded Intelligence

- Implementierung eines Sensor-Fusion Algorithmus zur Orientierungsbestimung eines Systems mithilfe einer inertialen Messeinheit (IMU) in **C++**

## AKADEMISCHER WERDEGANG

Oktober 2012- April. 2016

**Master of Science Commercial Vehicle Technology**

Technische Universität Kaiserslautern, Abschussnote: 1.9

*Studienschwerpunkte*: Regelungstechnik, Fahrdynamikregelung, Lastdatenanalyse, Echtzeitsysteme, Automotive Software Development.

Juni 2008- April 2012

**Bachelor of Engineering Fertigungstechnik**

Anna University, Chennai, Indien, Abschussnote: 8.3/10 (**sehr gut**)

Juni 1996- April 2008

**Gymnasium**

DAV Hr. Sec. School, Chennai, Indien, Abschussnote: 93/100 (**sehr gut**)

## AUSGEWÄHLTE PUBLIKATIONEN

**Gnanasambandham**, C.; Fleissner, F.; Eberhard, P.: Enhancing the Dissipative Properties of PDs using Rigid Obstacle-Grids. Journal of Sound and Vibration, Vol. 484, p. 115522, 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 Vibration, Vol. 454, pp. 1-13, 2019.

**Gnanasambandham**, C.; Schönle, A.; Eberhard, P.: Investigating the Dissipative Effects of Liquid Filled PDs using Coupled DEM-SPH Methods. Computational Particle Mechanic, Vol. 6, pp. 257-169, 2019.

Böblingen, den 26. Mai 2021

Chandramouli Gnanasambandham