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 Engineer, where I can leverage my expertise in simulation and analytical problem-solving to contribute to cutting-edge innovations in mobility.

Languages

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

Web

Linkedin
linkedin.com/in/gnanasambandhamc

GitHub
github.com/chandramouli6890

Matlab
MatlabCentral Profile

Professional Career

April 2023 - present
Torc Europe GmbH, Stuttgart
Staff Software Engineer

- Spearheaded a team 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
- Collaborated with external stakeholders to develop a scalable validation strategy for vehicle models as per ISO-26262.

August 2021 - March 2023
Daimler Truck AG, Stuttgart
Vehicle model engineer

- 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.

May 2016 - April 2021
University of Stuttgart
Scientific Staff at the institute for engineering and computational mechanics (ITM)

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

October 2015 - April 2016
Fraunhofer Institute (ITWM), Kaiserslautern
Intern in the department of mathematics for vehicle engineering

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

Both awards were offered by ALTEN GmbH, complemented with a cash-prize of **500€** respectively.

Other Fun Projects

July 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.

Juni 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.

Juni 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

May 2016 - April 2021
Ph.D. in Mechanical Engineering
University of Stuttgart

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

October 2012 - April 2016
Master of Science in Commercial Vehicle Technology
Technical University of Kaiserslautern, Grade: 1.9

June 2008 - April 2012
Bachelor of Engineering in Production Engineering
Anna University, Chennai, India, Grade CGPA: 8.3/10

Technical Skills

Programming Languages:
■ ■ ■ ■ ■ 12 years | C/C++
■ ■ ■ ■ ■ 12 years | MATLAB
■ ■ ■ □ □ 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^2, MSC Adams, Project Chrono
- **ADAS/AD-Simulation Tools:** Applied Object-Sim, IPG CarMaker
- **Multibody-Simulation:** LMS Virtual.Lab Motion, Neweul-M^2
- **Other Software Tools:** Silver Virtual-ECU, COMSOL Multiphysics, OptiSlang, Oracle VM VirtualBox

Software Development Tools:

- **CI Tools:** Git, Github CLI, Jenkins, Docker
- **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, 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.

Stuttgart, Wednesday 27th November, 2024

Dr.-Ing. Chandramouli Gnanasambandham