Qian Sun

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Techinische Universität Bergakademie Freiberg Master of Science
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Competences & Languages

Area of expertise	**New-energy vehicles**, **FEM**, **Modalanalysis**, **Light-weight manufacture**, MCU-System
Programming	**Matlab**®, Mathematica®, R, Python®, C
Tools	**Ansys**® Products, **Solidworks**®, Git, **LaTeX**, Microsoft® **Office**, Freescale®**CodeWarrior**, IAR®Embedded Workbench
Languages	**Germany** — C1; **English** — B1

Education

09.2010	School of Mechanical and Automotive Engineering, **Liaocheng University**
07.2014	Bachelor in **Automotive Engineering**
10.2016	Faculty 5 - Materials Science and Technology, **Technische Universität Bergakademie Freiberg**
07.2020	Master in **Automotive Construction: Materials and Components**

Skills

- *Vehicle technology* :
  Light-weight manufacture, **New energy vehicle technology**, Automotive Lightweight Technology
- *Materials engineering* :
  High temperature materials technology, Material processing and foundry, Bionics
- *Mechanics and Dynamics* :
  Modalanalysis, Structural analysis and simulation, Dynamics analysis and vibration simulation
- *Computer science* :
  Design and debugging of MCU-system, Design and debugging of control system.
- *Others* :
  Optimization design, Neural-network and deep learning, Big-data-analysis.

Personal Projects

- **`Master thesis:`** (*Matlab®*, *Mathematica®*, *Ansys®*, *Solidworks®*, *LaTeX*, *FEM*, *PULSE LabShop*, *ME'scopeVES*)
  ⇒ https://github.com/sq43793911/Masterarbeit_public
  Experimental and simulative modal analysis of a tool shank during HSC milling and

the influence of an eccentricity error. In the context of the advertised work, the dynamic behaviour of a tool shaft in HSC milling must be investigated. The influence of an unbalance (eccentricity) should be in the foreground. In addition to the simulation, an experimental study will also be carried out. For this purpose, an experimental device must be designed, manufactured and put into operation. The FE simulation is performed with Matlab. In addition, the CAD program Solidworks is used to design the components. PULSE LabShop and ME'scopeVES are used for the measurement.

- **Project work:** (*Matlab®, Mathematica®, Ansys®, LaTeX, FEM*)

  ⇒ https://github.com/sq43793911/Projektarbeit_public

  Modalanalysis with the Finite-Element-Method. As part of the advertised work, a program for numerical modal analysis using the finite element method is to be developed. The FE simulation is performed with Matlab. In addition, the FE-software Ansys is used to compare the results.

- **Research project for intelligent algorithms:** (*Matlab®*)

  ⇒ https://github.com/sq43793911/Intelligent-Algorithms

  a) Four popular intelligent optimization algorithms (genetic, ant colonial, immune, tabular table algorithm) are used to analyze the TSP and the advantages and disadvantages of different algorithms and their application value are compared.

  b) The genetic algorithm is used to optimize the analysis of cost management for warehouse storage and ordering.

  c) Based on Matlab's Classifacation Learner Toolbox, kNN(k Nearest Neighbour Classification Algorithm) and cluster analysis algorithms are studied and practiced, which are commonly used in data mining.

- **Balance Car:** (*Freescale®CodeWarrior, Freescale®S12X, C, CCD*)

  ⇒ https://github.com/sq43793911/Balance_Car

  A two-wheeled self-balance vehicle designed and manufactured on the requirements of the Freescale Smart Car Cup and with automatic lane detection and control functions. The control system is based on the Freescale S12X microcontroller and uses a CCD camera for track detection.

- **Analyzing of vibration systems:** (*Matlab®*)

  ⇒ https://github.com/sq43793911/Construction_Analysis

  Undamped vibrations, damped vibrations, the time domain properties of the Maxwell model and the reaction properties after the excitation are analyzed and the corresponding images are generated.

- **Resume:** (*LaTeX*)

  ⇒ https://github.com/sq43793911/resume

  This resume was crafted using LaTeXand learned the basic functions and usage of LaTeX.