



Vigneshwar

Karuppiyah Ramanathan

Mechanical Engineering (B.Tech)

Contact

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- 🐙 github.com/Vigneshwar-KR
- 🌐 <https://vigneshwar-kr.github.io/Vigneshwar/> (Portfolio Link)

Courses

- **Supervised and Unsupervised Machine learning** (Coursera)
 1. Linear and logistic regression
 2. Neural networks
 3. Decision trees, classification clustering
 4. Basic practices followed, case studies and projects.
- **Diploma in Product Design and Analysis**
CADD Centre, India
 1. AutoCAD 2D
 2. CATIA
 3. Ansys Workbench
 4. GD&T

Skills

1. Programming

C++, Python, JavaScript, ROS, HTML, CSS, C#

2. Softwares, Libraries and tools

OpenCV, Halcon, Scikit-learn, TensorFlow, PyTorch, Wandb, Cmake, LaTeX, Matplotlib, Scilab, NumPy, Pandas, Arduino

3. IDE'S

CLion, Microsoft Visual Studio, VS Code, Jupiter

4. Version control, Cloud services, Project management

Git, Gitlab, Github, Confluence, Jira, Microsoft Azure

5. Computer Aided Design and Engineering

NX CAD, Catia, AutoCAD, Ansys (Workbench, Fluent), Additive manufacturing

6. Database Management and Tools

DBMS, SQL, Microsoft SQL Server, MongoDB

Work and Practical Experience

Studentische Hilfskraft - TU Braunschweig

June 2024 – Present

Institut für Tragwerksentwurf

- Integrating an Arduino-controlled end effector with a universal robot for advanced additive manufacturing applications.

Studentische Hilfskraft - TU Braunschweig

Feb 2024 – Oct 2024

Institut für Werkzeugmaschinen und Fertigungstechnik

- Contributing in developing autonomous system dismantling process of battery systems. Involved in image processing, computer vision, object detection tasks and also deep learning models ([VaTreBat](#))
- Managing the integration of various robot-guided sensors and interfacing them with **MvTec Halcon**. These hardwares include,
 - Industrial and stereo cameras
 - Laser scanner and depth sensors
 - Kuka cobot
 - Microcontrollers

Studentische Hilfskraft - TU Braunschweig

July 2023 – April 2024

Institut für Flugführung ([C2Land](#))

- Gained experience in detection of vertipad by developing computer vision algorithms, incorporating various image processing techniques.
- Utilized **C++**, **OpenCV**, **CMake** and worked on the following tasks:
 - Localizing desired object and position determination for new use cases
 - Structuring and populating vertipad database
 - Plotting vertipads based on different metrics

System Engineer

April 2021 – June 2022

Infosys

- Engaged as a software developer under the Data and Analytics Legacy team (DNA) in the finance domain employing agile methodology.
- Engineered **RESTful backend APIs** using Node.js, Express.js, and MongoDB. Conducted unit testing with Mocha and Chai to maintain reliability.
- Collaborated on the implementation of data marts, data warehousing, and **ETL** process using MS SSMS for providing business intelligence solutions.

Languages

English L2

German B2

Test Scores

- **German DSH Zeugniss**
Institute : Leibniz Language Centre
Niveau : B2
Date : Dec 2023
- **IELTS (7.5)**
Date : Nov 2021

Position of Responsibility

- **Football team Captain (SRM-IST)**
Date : July 2019 – April 2020
- **Student Coordinator**
Date : Sep 2018 – Sep 2020
- **House Captain (NSN School)**
Date : June 2014 – May 2016

Conferences / Presentations

- **IEEE Global Conference for Advancement in Technology**
Bangalore, India, Oct 2019
Presented a paper on Resilience optimization of Octocopter drones using two-stage thrusters and thrust vector locking.

Interests

- **Football**
Regularly participate in football at TU Braunschweig and have represented both my previous university and a private club in numerous tournaments, including four years in the first division league
- **Web Development**
An intermediate-level practitioner in web development.
- **Travel**
Enthusiastic traveler who enjoys experiencing diverse cultures and cuisines, exploring new places.



Vigneshwar Karuppiyah Ramanathan

Braunschweig, 1st August 2024

Academic Background

Technische Universität Braunschweig
M.Sc. Computational Sciences in Engineering

Oct 2022 - Present

SRM Institute of Science and Technology
B Tech in Mechanical Engineering (Grade: 1.4)

Jul 2016 - Jul 2020

NSN Higher Secondary School
Higher Secondary education (Grade: 1.3)

Oct 2022 - Present

Projects

Studienarbeit (On going)
Institut für Fahrzeugtechnik (NFF)

Aug 2024 –Present

- Detection of Driver Distraction using Hybrid Deep Learning Models.
- Utilizing **OpenCV, Python, Deep Learning, CNNs, LSTMs**

Object detection of system components
TU Braunschweig

May 2024 –Present

- Implementing a deep learning model to detect and localize system components. This model will be utilized for the localizing tasks in my Hiwi project: [VaTreBat](#). (Refer: [GitHub](#))
- Currently engaged in enhancing dataset and model development to tackle intricate challenges. Utilizing **YOLOv8, OpenCV, Python**

Football AI object detection project

Sept 2019 – Nov 2019

- Trained and fine-tuned an object detection model to accurately detect and track football players, referees, and balls in video footage.
- Applied pixel segmentation and clustering technique (**KMeans**) for team classification and measure ball possession in real time. (Refer: [GitHub](#)).
- Utilized **YOLO, OpenCV, Python, SKlearn**, Perspective transformation

Hands-on projects
TU Braunschweig

Oct 2022 – Present

- During the courses listed below, I undertook a range of hands-on projects and assignments,
 - **Deep learning** - Developing image-based deep learning models tailored for remote sensing applications. Projects within this course encompass various topics and tasks which includes,
 - * Image recognition, Object detection, Image segmentation
 - Robotpraktikum, Computerlab Mustererkennung (current semester)
 - Grundlagen Maschinelles Lernen, Computer vision & machine learning
 - Maschinelles Lernen und Anwendungen in der Luft und Raumfahrt
 - Algorithms & Programming lab, Scientific Software Engineering lab

Simulation of Optimal 3d Environment Mapping Using Dual Axially Rotating Lidar Sensors

Aug 2020 – Sept 2020

- Engineered and programmed an innovative mechanical system containing dual axially rotating wheels which makes use of few sensors to reach most of the 3D space efficiently.
- The mathematical model of the system is simulated and the lidar's 3D space is mapped in SCILAB software using various parameters.