VIGNESHWAR KARUPPIAH RAMANATHAN

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☆ Fully work Authorized | For a detailed overview of my profile and experience, please visit my portfolio website.

SKILLS

PROGRAMMING: Python, JavaScript, HTML, CSS

SOFTWARES, LIBRARIES AND TOOLS: OpenCV, Halcon, TensorFlow, PyTorch, Keras, CUDA, Slurm, Wandb, MediaPipe, Matplotlib, Scilab, NumPy, Scikit-learn, Pandas, Tkinter, LaTex, Arduino

IDE'S: CLion, Microsoft Visual Studio, VS Code, Jupiter

VERSION CONTROL, CLOUD SERVICES, PROJECT MANAGEMENT: GIT, Gitlab, GitHub, JIRA, Confluence, Microsoft Azure

COMPUTER AIDED DESIGN AND ENGINEERING: NX CAD, AutoCAD, Ansys Workbench, Additive manufacturing

DATABASE MANAGEMENT AND TOOLS: SQL, Microsoft SQL Server, MongoDB

EXPERIENCE

Student Research Assistant - TU Braunschweig

Institute for Machine Tools and Manufacturing Technology (VaTreBat)

📅 02/2024 - Present

- Autonomous dismantling process of battery systems
- Developing image processing, vision algorithms for battery based hardwares
- Handling object detection tasks using deep learning models
- Establishing a multi sensor environment and interfacing them with **MvTec Halcon**
- Research and integration of suitable hardware, software, prototype development

Student Research Assistant - TU Braunschweig

Institute of Flight Guidance (C2Land)

📅 07/2023 - 04/2024

- Achieved faster detection of vertipad by developing computer vision algorithms
- Localized desired object in diverse use cases, improving project scope
- Structured, populated database and visualized vertipads based on distinct metrics
- Utilized **C++, OpenCV**

Student Research Assistant - TU Braunschweig

Institute for Structural Design

📅 06/2024 - Present

- Enhanced the existing setup by integrating **Arduino** controlled end effectors with Universal Robots for additive manufacturing applications

System Engineer

Infosys

📅 04/2021 - 06/2022

- **Role:** Software Developer, Data and Analytics Legacy Team - Finance Domain
- Engineered **RESTful backend APIs** using Node.js, Express.js, and MongoDB
- Ensured reliability with unit testing on APIs using Mocha and Chai
- Collaborated in **ETL process** using MS SSMS for providing business solutions
- Operated in an agile environment, enabling efficient sprints and team collaboration

COURSES

Machine Learning Specialization (Coursera)

Improving Deep Neural Networks (Coursera)

Diploma in Product Design and Analysis (CADD Centre, India)

POSITION OF RESPONSIBILITY

Student Coordinator, SRM-IST
09/2018 - 09/2020

Football team Captain, SRM-IST
07/2019 - 05/2020

PRESENTATIONS / CONFERENCES

IEEE Global Conference for Advancement in Technology, India (OCT/2019)

Presented a paper on Resilience optimization of Octocopter drones using two-stage thrusters and thrust vector locking

EDUCATION

Technical University of Braunschweig
(Grade: 2.2)   10/2022 - Present

M.Sc. Computational Sciences in Engineering

SRM Institute of Science and Technology
(Grade: 1.8)   07/2016 - 06/2020

Bachelor of Technology in Mechanical Engineering

PROJECTS

Student specialization project (On going)

Institute of Automotive Engineering
Niedersächsisches Forschungszentrum fahrzeugtechnik

- **Project:** Detection of Driver Distraction using Hybrid Deep Learning Models for dual camera setup
- Performed Exploratory Data Analysis (**EDA**)
- Driver facial distraction, Hands-on wheel detection
- Utilized **OpenCV, CNNs, LSTMs, Time series data, Pose Estimation, MediaPipe, TensorFlow, Slurm, Camera Calibration, Transfer Learning and Fine-Tuning, Model evaluation, KPIs, GradCAM**

Hands-on projects (TU Braunschweig)

- **Deep learning:** Remote sensing applications
  1) Image processing, Image classification, Object detection, Image segmentation, Generative AI, eXplainable AI - LRP, GradCAM. (GitHub)
  2) *Final Project:* Evaluation of YOLO models on DIOR (GitHub). Fine-tuned YOLOv8 outperformed existing models present in DIOR paper by 23% in MAP@0.50
- Robot internship, Computer lab Pattern Recognition
- Computer Vision and Machine Learning

DLR project

Advanced Data Science Internship (TU Braunschweig)
- Semantic Segmentation of CFRP material
- Won the best model and poster award for final project

Instance Segmentation for Robotic bin picking

- Utilized **YOLO segmentation, YOLO + SAM 2**

Football AI object detection project

- Utilized **YOLO, OpenCV, Python, SKlearn** (GitHub)

Object detection of Battery system components

Simulation of optimal 3D environment mapping with dual axially rotating Lidar

ADDITIONAL EXPERIENCE

Student Research Assistant - TU Braunschweig

- Press and Communication
- Institute for Mobile Machines and Commercial Vehicles

Simulation Lab, India (Research Internship)

LANGUAGES, TEST SCORES

English	Full Professional Proficiency
German (B2)	Limited Working Proficiency
Deutsch DSH (Dec 2023)	DSH 1 (B2)
IELTS (Nov 2021)	7.5