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, C++, JavaScript, HTML, CSS

SOFTWARES, LIBRARIES AND TOOLS: OpenCV, Halcon, TensorFlow, PyTorch, Keras, CUDA, Slurm, Wandb, MediaPipe, Matplotlib, Scilab, NumPy, Scikit-learn, Pandas, Tkinter, Cmake, 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, Catia, 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
- Implementing image processing, computer vision algorithms
- Handling object detection tasks using deep learning models
- Establishing a multi sensor environment and interfacing them with **MvTec Halcon**

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, CMake**

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)

Sequence Models (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

M.Sc. Computational Sciences in Engineering (Grade: 2.2)

10/2022 - Present

SRM Institute of Science and Technology

Bachelor of Technology in Mechanical Engineering (Grade: 1.8)

07/2016 - 07/2020

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**)
- Utilized **OpenCV, CNNs, LSTMs, Time series data, Pose Estimation, MediaPipe, TensorFlow, Slurm, Camera Calibration, Transfer Learning and Fine-Tuning, GradCAM**

Football AI object detection project

- Trained and fine-tuned an object detection, tracking model. Applied pixel segmentation and KMeans
- Utilized **YOLO, OpenCV, Python, SKlearn, Perspective transformation**. (GitHub)

Hands-on projects

TU Braunschweig

- **Deep learning:** Image-based deep learning models tailored for remote sensing applications covering,
  1) Image processing, various Image classification, Object detection, Image segmentation, Generative AI, eXplainable AI - LRP, CAM, GradCAM. (GitHub)
  2) ***Final Project:*** Evaluation of YOLO models on DIOR dataset. (***YOLOv8, YOLO NAS***) (GitHub)
  - Fine-tuned YOLOv8 model outperformed existing models mentioned in DIOR paper by 23% in MAP@0.50
- Robot internship, Computer lab Pattern Recognition
- Computer Vision and Machine Learning, Advanced Data Science Internship, ML in aerospace applications

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