VIJUL SHAH

Machine Learning Engineer | Full Stack Developer

• vijul1904shah@gmail.com • +4915758154377 • Kaiserslautern, Germany
• https://github.com/vijulshah • https://www.linkedin.com/in/vijul-shah-38a774168/

EDUCATION

Master in Computer Science **Oct 2021 - Nov 2024**

Rheinland-Pfälzische Technische Universität Kaiserslautern-Landau (RPTU) at Kaiserslautern, Germany. **Grades: 2.1**

- 1st Specialization in Intelligent Systems.
- 2nd Specialization in Data Visualization & Scientific Computing.

Bachelor of Computer Engineering **Aug 2016 - Aug 2020**

LDRP-ITR at Gandhinagar, India

WORK EXPERIENCE

ML Engineer, Fraunhofer IAIS **Dec 2022 – current, at Sankt Augustin, Germany**

- Developed a Deep Learning framework for experiment reproducibility. https://github.com/mlgym/mlgym
- Developed Language Model for verifying German and English financial docs.
- Working on a project to detect sections in PDFs using Object Detection models and parse PDFs contents.
- Reference: Daniel Uedelhoven (daniel.uedelhoven@iais.fraunhofer.de)

Full Stack Developer, Bonds India **Aug 2020 – Sept 2021, at Delhi, India**

- Developed secure authentication pipelines.
- Developed websites in React JS and Python with SQL and AWS.
- Worked on Bug fixing, Optimizations, and Enhancements of the websites.
- Reference: Abhishek Birla [Tech Lead] (abhishek.birla@bondsindia.com)

Student Assistant, DFKI (German Research Center for Artificial Intelligence)
April 2022 - Aug 2022, at Kaiserslautern, Germany

- Worked on exploring and comparing performance of various time-series databases.
- TimescaleDB, Victoria Metrics, InfluxDB.
- Reference: Christoph Balada [PhD Student] (christoph.balada@dfki.de)

App Development Intern, Stackmaze solutions pvt ltd **Dec 2019 - Jun 2020, at Ahmedabad, India**

- Worked on development, optimization, and bug fixes of various mobile apps.
- Developed mobile apps in React Native with Firebase and Firestore.
- Reference: Maulik Patel [Director] (maulik@stackmaze.com)

SKILLS

- **Programming Skills:** Python, Java, Node JS, Javascript, React-JS, React-Native, Flask, AWS
- **ML / DL/ Data Analysis:** Pytorch, SQL, Numpy, Pandas, R, Matplotlib, MLFlow, Pytorch Lightning, Captum, torch-cam, Hugging Face, Accelerate, SLURM, Github, Gitlab
- **Computer Vision & NLP:** Object Detection, Image Segmentation, Classification, OpenCV, PEFT, Q-LoRA, Langchain, Streamlit

RESEARCH & PUBLICATIONS

ORCID: 0009-0008-5174-0793

- **EyeDentify:** A Dataset (and first results) for Pupil Diameter Estimation based on Webcam Images. https://arxiv.org/abs/2407.11204v1
- **Webcam-based Pupil Diameter Prediction Benefits from Upscaling:** **Accpeted** at International Conference on Agents and Artificial Intelligence (ICAART 2025). https://arxiv.org/abs/2408.10397
- **PupilSense:** A Novel Application for Webcam-Based Pupil Diameter Estimation. **Submitted** at Eye Tracking Research & Applications (ETRA 2025). https://huggingface.co/spaces/vijulshah/pupilsense

THESIS

Pupil Size Estimation with Super Resolution **at DFKI, Kaiserslautern - Mar 2024 - Nov 2024**
Grade: 1.0

- Developing pipelines and models for pupil size detection along with Integrating super-resolution models for detection.
- Tasks: Data collection, Pre-processing, Super Resolution, Model Training. User surveys.
- https://github.com/vijulshah/webcam-based-pupil-diameter-estimation
- https://vijulshah.github.io/eyedentify
- Reference-1: Brian Moser [PhD Student] (brian.moser@dfki.de)
- Reference-2: Ko Watanabe [PhD Student] (ko.watanabe@dfki.de)

PROJECTS

Earth Observation with Explainable AI (XAI) **at DFKI, Kaiserslautern**

- Crop Classification and Segmentation through satellite fusion and Deep Neural Networks.
- Integrated Explainable AI for feature attribution analysis.
- Reference - Hiba Najjar [PhD Student] (hiba.najjar@dfki.de)

Fine-Tune LLM for Code Generation with Streamlit **at RPTU, Kaiserslautern**

- Fine-tune CodeLlama-7b-hf via Q-LoRA and PEFT.
- Synthetic dataset generation using meta.llama2-70b-chat-v1 by using prompting techniques.
- Created Streamlit App to prompt the model.
- https://github.com/vijulshah/ft_llm_code_generation

Digit Prediction using Pytorch and Flask **personal project**

- Trained a CNN on the MNIST dataset.
- Developed a React JS frontend to upload images and a Flask API for seamless communication with the trained model.
- https://github.com/vijulshah/Digits_Prediction

CERTIFICATES

- Oracle Certified Professional, Java SE 6 Programmer — **6th Oct 2017**
- Oracle Certified Expert, Java EE 6 Web Component Developer — **6th July 2018**

LANGUAGES

- English: Professional Proficiency (C1 - IELTS)
- German: Elementary Proficiency (A2 - German Exam)
- Hindi: Professional Proficiency
- Gujarati: Mother Tongue