

# SIMHADRI HOLAGUNDHI

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## EXPERIENCE

### Research Assistant

**Interaction Design and Technologies, Fraunhofer IAO**

📅 Mar 2022 – Present

📍 Stuttgart, Germany

- Developed a hands-free User Interface using an eye-tracker for a solar farm maintenance demo.
- Developed a multi-objective search mechanism considering location, environmental, and driving context of cars.
- Contributed to the development of an HMI prototype for proactive interaction in future cars (Patent application in progress).
- Applied research of interaction with multi-agent Large Language Models for multi-criteria decision making.
- Implemented RAG with Large Language Models for customer support.
- Conducted comprehensive exploration, modification, and application of data science and data analytic prototypes.
- Implemented ML models for predicting losses in Electrical Transformers, contributing to resource savings.

**Skills:** Large Language Models Python Data Analytics  
Interaction Technology Machine Learning Unity

### Research Assistant

**Analytic Computing, University of Stuttgart**

📅 Nov 2021 – Feb 2022

📍 Stuttgart, Germany

- Developed application prototype for a mixed reality experience using Microsoft HoloLens.
- Integrated eye-tracking features for real-time guidance and knowledge transfer in medical environments.
- Conducted a detailed study with medical experts to evaluate the product.

**Skills:** Mixed Reality Gaze Interaction WebRTC C#  
Unity

### Project Intern

**Grydsense**

📅 Jun 2019 – Aug 2019

📍 Bengaluru, India

- Developed firmware for ZigBee System-on-Chip (SOC) for Automatic lighting control system.
- Integrated proprietary sensor board with ZigBee SOC.

**Skills:** ZigBee Embedded Systems IoT C

## EDUCATION

### M.Sc. - Information Technology

**University of Stuttgart**

📅 Oct 2020–Oct 2023 📍 Stuttgart, Germany

**Subjects:** Deep Learning, Machine Learning, Detection and Pattern Recognition, Scientific Visualization, Software Engineering for Real-time systems

### B.Engg. - Electronics and Communication Engineering

**Dayananda Sagar College of Engineering**

📅 Aug 2016–Aug2020 📍 Bengaluru, India

**Subjects:** Image Processing, Signal Processing, Embedded Systems, Python Programming

## SKILLS

### Programming

- Python
  - Pytorch
  - LangChain
  - Pandas
  - OpenCV
- C#
- C/C++
- HTML/CSS/JavaScript

### Tools and Software

- Unity
- Git
- Mixed Reality Toolkit

### Technical Skills

- Deep Learning
- Interaction Technology
- Mixed Reality
- Image Processing
- Large Language Models

## LANGUAGES

- English - C1 Expert
- German - A1 Beginner

# PROJECTS

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## Deep Learning based Risk Assessment for Franka Emika Panda manipulator

### Master Thesis

📅 May 2023 – Nov 2023

📍 IAS, University of Stuttgart

- Implemented a data collection pipeline using ROS/Gazebo.
- Developed and evaluated Graph Neural Networks for failure prediction in the Franka Emika Panda manipulator.
- Achieved predictions of failures up to 0.3 seconds in advance.

#### GitHub:

- [Deep Learning based Risk Assessment](#)
- [Fault Injection Simulation](#)

Risk Assessment

Failure Prediction

GCN

GAT

LSTM

Graph Neural Networks

ROS

Gazebo

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## Generative Modelling for Appearance-based Eye Gaze Estimation

### Research Project

📅 Nov 2021 – May 2022

📍 HCICS, University of Stuttgart

- Conducted a quantitative evaluation of the influence of synthetic data on gaze estimation.
- Developed GAN models for data augmentation, improving gaze estimation by 10%.

GitHub: [Generative modelling Gaze estimation](#)

Gaze estimation

Image Processing

Computer Vision

Data Augmentation

GAN

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## Human Activity Recognition and Diabetic Retinopathy Detection

### Deep Learning Lab

📅 Nov 2021 – Feb 2022

📍 ISS, University of Stuttgart

#### GitHub:

- [Human-Activity-Recognition](#)
- [Diabetic-Retinopathy-Detection](#)

Image Processing

Computer Vision

Image Classification

Sequence Prediction

ResNet

LSTM

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## Simulation of Quantum Image Steganography

### Bachelor Thesis

📅 Oct 2019 – Apr 2020

📍 Dept of ECE, DSCE, Bengaluru

- Designed, implemented and simulated Quantum Steganography on a classical computer.
- Implemented a pipeline for encryption and decryption of secret images for improved security.

GitHub: [QuantumSteganography](#)

Quantum Computing

Steganography

Image Processing

MATLAB

Encryption

Security