Kavya Shankar

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About me

I'm passionate about building intelligent systems that enhance human efficiency and eager to contribute to cutting-edge technology in research.

Education

2021 – Present — **Masters**
Autonomous System
Hochschule Bonn-Rhein-Sieg, Sankt Augustin, Germany

2016 – 2020 — **Bachelor's Degree**
Computer Science and Engineering
Presidency University, Bangalore, India

2015 – 2016 — **Pre-University**
Physics, Chemistry, Mathematics,Biology
Chethana Pre-University, Bangalore, India

2013 – 2014 — **Higher Secondary**
Central Board of Secondary Education (CBSE)
Agragami Vidya Kendra, Bangalore, India

Technical skills

Machine learning	Deep Learning for Vision
Python, Java, C	Robotic Perception
Data science	Natural language processing

Master's Thesis

FunAkt3D: Functional element detection and affordance understanding for Robot Interaction

I presented a novel, camera-centric 3D trajectory prediction framework that enables robots to learn affordance-conditioned manipulation from egocentric videos.
Through extensive real-world testing, demonstrated a 61% success rate of trajectory priors and execution for manipulation tasks involving drawers and doors of objects with different geometry and functional elements.
Experimental results show that the affordance-conditioned model achieves a 34% higher success rate than the non-conditioned diffusion model. The quantitative metrics show that affordance-conditioned models boost end-effector orientation and grasp accuracy.
Tech: Robotic Perception and Learning, OpenCV, Open3D, Diffusion Model, ROS.

Work experience

Oct 2024 – Feb 2026

PhenoInspect, Germany

Student-Data Assistant

Responsible for annotating and segmenting plants images, while also performing detailed quality assurance for machine learning training data Tech: custom Computer Vision Annotation Tool, SAM (Segment Anything Model)

April 2024 – July 2024

ubiMaster, Germany

Student-AI solution Assistant

Automating manual tasks using AI, focusing on time series data to enhance predictions and provide recommendations for swift human intervention.
Tech: Machine learning, Deep Neural Networks, Time series, QA.

January 2023 – September 2023

Vaillant Group, Germany

Student-NLP Assistant

Researched a spare part recommendation system using NLP, focused on Feature extraction techniques.

Tech: NLP, Machine learning

November 2021 – December 2022

Fraunhofer - IAIS, Germany

Student-Research Assistant

Researched and analyzed novel strategies for news classification challenges using natural language processing.

Tech: NLP, Machine learning, Pytorch, BERT, Zero-shot learning, t-SNE, Linux, Pytorch.

September 2020 – January 2021

Covalensedigital, India

Software Developer

Trained on C, PL/SQL, SQL, PHP, Web service, UX and Usability, Java and J2EE to find niche solutions for subscription monetization in telecommunication.

Tech: Python, Java, C

Project

Functional Elements identification

This project aims to develop a robust system for detecting functional elements (e.g., buttons, knobs, switches) in 3D scans of indoor environments..

Tech: Computer vision and graphics, Open3D, YOLO, CV2

Forecasting Daily Student Interactions in an EdTech Platform

Developed a hybrid time series forecasting model to predict daily student question volumes in a mathematics, science and language learning platform by integrated both temporal trends and user activity features to improve accuracy.

Tech: Python, statsmodels, Pytroch forecasting models

Spare part recommendation system

Performed this research under the stream "Learning for Multilingual Knowledge Transfer". The goal was to leverage the availability of a higher amount of data in high-resource languages to train and improve over lower-resource languages.

Tech: NLP, Machine learning, BERT, Zero-shot learning, t-SNE, Pytorch, Wandb.

Topic Investigation for Online News Classification

Performed this research under the stream "Learning for Multilingual Knowledge Transfer". The goal was to leverage the availability of a higher amount of data in high-resource languages to train and improve over lower-resource languages.

Tech: NLP, Machine learning, BERT, Zero-shot learning, t-SNE, Pytorch, Wandb.

Question Answering System for Neural Networks

The question-answering system is a corpus-based chatbot that tries to answer questions related to neural networks.

The system uses the dataset that contains relevant questions and their responses.

Tech: NLP, BERT, SentenceTransformers.

Engagement in a Robot-Assisted Therapy (RAT) session for children with autism spectrum disorders (ASD)

In order to gauge the child's engagement, a model was trained with data from several sessions of OpenFace's visual features.

Tech: Deep learning, Knowledge distillation, Pytorch.

Motion Control Kelo 500 Robot

BLAS was used to implement a numerical solution that computes the torques required to move the robot's wheels in the desired direction. The SOEM library was employed to communicate with the robot's wheels. The primary concept of motion was the inverse transform platform force for individual wheel torques.

Tech: Simple Open EtherCAT Master (SOEM), Basic Linear Algebra Subprograms (BLAS), Lapack, C, GSL - GNU scientific library.

Mini-Project

Retinal Layer segmentation in OCT imaging

Integrated the EVA-02 Vision Transformer (ViT) backbone into an OCT retinal layer segmentation pipeline for improved representation learning.
Tech: PyTorch, PyTorch Lightning, Vision Transformer (ViT)

Study-buddy Chatbot

Built a chatbot using data from the H-brs website that can answer inquiries from students.
Tech: NLP, Pytorch, Bi-LSTM.

Doctor Assistance System

A Python-based model that includes tools for storing and displaying patient data and appointments to reveal disease statistics.
Tech: MySQL, Data visualization, Python.

Smart Parking System

Built a prototype for an intelligent parking system with an Arduino, ultrasonic sensors, piezo plates, an LCD screen, and a servo motor. Managed massive amounts of information produced by this system.
Tech: IoT, Hadoop using Cloudera, Big data.

Internship

January 2020 – March 2020

BizRunTime IT Services

Software Engineer Intern

BizRunTime IT Services is a SaaS provider transforming industrial operations. I worked on tools for data collection, storage, analysis, and sharing in the oil and gas sector.
Tech: C Sharp, Python, Statistics, and Machine learning

March 2020 – May 2020

Chloros Tech

Digital Marketing Professional

Chloros Tech provides ERP, custom CRM solutions, and mobile app development for enterprise needs.
Tech: Digital SEO and SMO marketing, Mobile app development

June 2018 – July 2018

Solocubes Co-working and Meetups

Digital Marketing Professional

Solocubes supports freelancers and startups by promoting skills, identifying Tech, and organizing learning and mentoring events.
Tech: Social media analysis

Certification

July 2017-October 2017

Trinity Info System

C, C++ and JAVA

Programming course to design and build executable computing results in C, C++, Java, and J2EE by acquiring skills in Data structure, algorithms, memory management, and Object-oriented concepts.

June 2020 - November 2020

Business Toys

Data Science Certification

Course on understanding and analyzing data including concepts like statistics, big data, machine learning, and deep learning. Advanced training in SQL, data visualization, data analysis, Excel, PowerBI, Tableau, Spark, Hive, RNN using Keras.