Kartik Sachdev
MSc. Robotic Systems at RWTH Aachen University

linkedin.com/in/kartik-sachdev-7bb581ab github.com/sachdevkartik
medium.com/@sachdev.kartik25 @ kartik.sachdev@rwth-aachen.de
+49 176 45791369 Munich, Germany

Graduate student with previous industrial Research and Development experience across different geographies - Germany, Japan, and India. A demonstrated history of working in the robotics and automobile sector in varied domains like computer vision, software development and mechanical design. Motivated to gain more experience in Computer Vision.

Skills

Languages Python, MATLAB, C++
Libraries PyTorch, OpenAI Gym, OpenCV, AutoGluon, Auto-PyTorch, Wandb, Hugging Face
Tools Linux, Docker, AWS, Slurm, Git, Blender, MeshLab, ROS, Gazebo, MoveIt

Work Experience

Present – 04/2022 | **Work Student | Computer Vision Engineer, Siemens AG, Munich, Germany**
- Working on 6D pose estimation, segmentation and object detection for an Automated Bin Picking Robot using PyTorch and Python
- Generating synthetic dataset for multiple use cases using Blender and MeshLab
- Automated the data prepossessing and training pipeline with unit tests and CI/CD
- Training Computer Vision models on AWS

Ubuntu | PyTorch | Python | AWS | Blender | MeshLab | OpenCV | UR Robot | CI/CD

10/2022 – 06/2022 | **Open-Source Contributor, Google Summer of Code (GSoC), Munich, Germany**
- GitHub repository
- Worked on project Transformers for Dark Matter Morphology with Strong Gravitational Lensing in association with an open-source organization, Machine Learning for Science (ML4Sci)
- Benchmarked various versions of Vision Transformers on a Compute Cluster and tracking using Weights & Biases for the image classification task
- Developed a novel Vision Transformer architecture that combines Equivariant Networks and Convolutional Vision Transformers (research abstract)

CentOS | PyTorch | Slurm | HPC | Wandb | Python | Git

02/2022 – 07/2021 | **Intern | Robotic Software Developer, BMW AG, Munich, Germany**
- Designed State Machines for a logistic collaborative robot using Python and ROS for high-level robot behavior following the Scrum methodology
- Developed the simulation of respective production and early stage logistic robots for the purpose of conceptualization and feasibility study using ROS, MoveIt, and Gazebo
- Integrated robotic software suites on the robots and their respective simulations using Docker and Docker-Compose
- Initiated and held a training workshop on Docker and Docker-Compose attended by over 20 members from various teams with an aim to provide an in-depth understanding of the tools

Ubuntu | Python | Docker | ROS | MoveIt | Gazebo | State Machine | Scrum | Jira | UR Robot

08/2020 – 04/2019 | **Freelancing, Self-Employed, Delhi, India**
- Provided Japanese-English interpretation and translation services to an MBA institute, New Delhi Institute of Management for a project, Indo-Japan Technical Intern Training Program (TITP)
- Provided Japanese language tuition to high school students

04/2019 – 11/2016 | **Full-time | Research and Development Engineer, TBK Co., Ltd., Tokyo, Japan**
- Designed and analyzed water pumps for heavy duty vehicles
- Coordinated with the Indian subsidiary on issues pertaining to development and testing
- Coached an intern in Japanese language and business ethics
- Offered language interpretation during client meetings and translation of technical documents

Siemens NX | Microsoft Office

10/2016 – 07/2016 | **Full-time | Project Engineer, Wipro Limited, Bangalore, India**
- Supervised fabrication and assembling of an Autonomous car
- Studied ROS and architecture of the Autonomous car

ROS | Python

Education

07/2022 — **EEML Summer School, University of Vilnius, Vilnius, Lithuania**
- **Topics**: Deep Reinforcement Learning, Natural Language Processing, Computer Vision
- Presented a poster on Rotation Equivariant Convolutional Vision Transformer (link)
- Official Website

11/2021 — **AutoML Fall School, University of Freiburg, Freiburg, Germany**
- **Topics**: Hyperparameter Optimization, Neural Architecture Search, Autosklearn, SMAC
- Stood at the third position in AutoML Fall School Hackathon on a tabular data
- Official Website

Present 09/2020 — **M.Sc Robotic Systems Engineering, RWTH Aachen University, Aachen, Germany**
- **Grades**: 2.0
- **Courses**: Reinforcement Learning and Learning-based Control, Deep Learning for Visual Recognition, Self-Driving Lab, Machine Learning, Seminar Intelligent Processing & Analysis of Data
- Researched on attention mechanism for vision tasks and wrote a review paper for the seminar on an existing paper, Visual Attention Network (review paper)
- Researched on state-of-art methods in Reinforcement Learning and wrote a review paper on an existing paper, Soft Actor-Critic (review paper)

06/2016 08/2012 — **B.E Manufacturing Process and Automation, University of Delhi, Delhi, India**
- **Grades**: 74.05% or 8.15 (CGPA)
- **Relevant courses**: AI, Optimization Techniques, Industrial electronics etc.
- **Bachelor's thesis**: Design and Development of Motorcycle Ambulance

Projects

Design and Simulation of 5-DOF Upper-Body Exoskeleton Robotic System 03/2020 - 08/2020
Designed a 5-DOF upper body exoskeleton using 95^{th} percentile body dimensions. Simulated simple object detection, and developed a pick and place pipeline with an intent to learn the essential tools- ROS, Gazebo and MoveIt

Design and Development of Motorcycle Ambulance 06/2015 - 07/2016
- Worked at Defense Research and Development Organization (DRDO), India for bachelor's thesis
- Conceptualized, designed and developed the first prototype of Motorcycle Ambulance
- Led and handled a team of four for the project
- Product currently being used by the Central Reserve Police Force (CRPF), India (News converage)

Talks

Studies, Internship and Job in Germany 03/2022 & 09/2021
Shared my experience, views, and useful tips on studying at RWTH Aachen University and searching for internship/student jobs in Germany. Talk attended by over 150 students in a hybrid Online-Offline event

Paper presentation - SimCLR 12/2021
- Presented the paper "A Simple Framework for Contrastive Learning of Visual Representations" in a monthly paper reading event organized by Machine Learning Tokyo. Talk attended by over 20 members in an Online event
- YouTube

Achievements

Second Position in Fraunhofer's #hackingforfuture Hackathon 04/2021
Developed Light Gradient Boosting Machine ensemble for an Explainable AI project using PyCaret, CXPlain and SHAP

Participation in Nextgrid's GPT-3 Hackathon 04/2021
Developed a web application based on GPT-3 for making LaTeX presentations using Natural Language

Languages

English ●●●●●
German ●●●○○
Japanese ●●●○○

Certifications

- Machine Learning Course
- Robotics: Perception Course
- Robotics: Computational Motion Planning Course