

Shalini Sarode

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EDUCATION

RPTU Kaiserslautern-Landau | *Grade: 1.9*

MSc. Computer Science

Kaiserslautern

Oct. 2021 – Oct 2024

Visvesvaraya Technological University | *Grade: 8.78*

BE Computer Science and Engineering

Bengaluru, IN

Aug. 2015 – Jul 2019

EXPERIENCE

Research Assistant - Augmented Vision

German Research Center for AI (DFKI)

Jan 2023 – Present

Kaiserslautern, DE

Project: Semi-Supervised Learning

Aug 2023 - Present

- Performed tasks in all the stages of two research papers. The tasks in the pipeline ranged from literature reviews of current trends, ideation process, prototyping, implementation, experimentation, and documentation.
- Implemented the core attention module to align object queries and target features semantically and performed extensive experiments on 6 different datasets like tablebank, publaynet etc.
- Our approach consistently achieved a significant mAP gain over SOTA methods on 10%,30% and 50% labeled data. The paper was **accepted at ICDAR 2024 Oral track** held in Athens, Greece.
- Ideated and implemented the 'super teacher' module, a novel approach to improve the pseudo label quality in Semi-DETR. The paper is currently **under review at CVPR 2025**.
- Tools: python, pytorch, DETRs, mmdet, git, latex

Project: 3D Scene Reconstruction

Jan 2023 - June 2023

- Surveyed the existing literature on depth estimation of 360-degree (ERP) images.
- Implemented a baseline for the 3D-reconstruction of a scene from ERP images.
- Compared the efficiency of two photo-inpainting methods.
- Tools: python, pytorch, open3d, opencv, meshlab, git

Teaching Assistant - course AI

RPTU Kaiserslautern-Landau

Oct. 2023 – Apr. 2024

Kaiserslautern

- Graded weekly assignments and the final exam and delivered constructive feedback to students on ways to improve.
- Conducted tutorial sessions to explain assignment solutions to boost student comprehension.
- Identified student challenges and discussed corrective actions with the lead teacher.

Data Analytics Engineer

Collins Aerospace

Jan 2019 to June 2021

Bengaluru, IN

Associate Engineer

Jul. 2019 to Jun. 2021

- Responsible for the development and validation of predictive analytics to reduce aircraft downtime and send timely alerts to airlines to mitigate a catastrophic failure.
- Designed an experiment to determine the textile characteristics of an airplane slide using photogrammetry
- Developed ML models to investigate failure of parts that had passed initial tests
- Tools: Python, Azure Databricks, numpy, pandas Power BI, React JS

Intern

Jan. 2019 to Jun. 2019

- Gained practical experience by applying OCR techniques for document analysis of scanned images.
- Demonstrated ability to take initiative and work independently on assigned projects.

Intern - ADAS

Continental AG

Jun. 2018 to Aug. 2018

Bengaluru, IN

- Re-implemented a paper from scratch to estimate the ego-motion of monocular images from KITTI dataset.
- Gained a comprehensive understanding in the working of neural networks and their application in autonomous driver assistance.

PROJECTS

- Classroom-inspired learning for Deep Neural Networks** | *Master Thesis* Apr. 2023 – Oct. 2023
- Developed an efficient multi-mentor knowledge distillation framework to create compact and greener student models(MobileNet, resnet, ShuffleNet etc)
 - Designed the system to incorporate aspects of human classroom-learning.
 - Extensive experiments across 2 CV tasks and 4 datasets(CIFAR100, Imagenet, MS-COCO, MPII) showed SOTA results **Paper under review at ICLR 2025**. Deployed a student model trained on COCO dataset as a 2D-human keypoint estimation mobile app.
- Human Pose Estimation using Knowledge Distillation** | *Master Project* May 2018 – May 2020
- Implemented knowledge distillation for transformer-based HPE models with regression heads.
 - Studied the impact of training with an additional peer model similar to the 'think, pair, share' paradigm in classroom learning.
- Customer Churn Prediction in the Retail Sector** | *Capstone Project* Jan 2019 – Jul 2019
- Developed a customer churn prediction and retention model for retail businesses using the Pareto/NBD model, RFM analysis, and k-means clustering, combined with machine learning algorithms to target churned customers with personalized recommendations, improving customer retention strategies.
- Leaf Disease Detection using ML** | *Mini Project* Jan 2018 – Jul 2018
- Trained an alexnet model with transfer learning to predict if a plant was diseased.

TECHNICAL SKILLS

Languages: Python, C/C++, R, latex
Frameworks: OpenMM, OpenCV, Open3D, meshlab
Developer Tools: Git, Google Cloud Platform, VS Code, Visual Studio, Overleaf
Libraries: pandas, NumPy, Matplotlib, pyTorch

PUBLICATIONS

- Shehzadi, T., Sarode, S., Stricker, D. and Afzal, M.Z., 2024, August. Towards End-to-End Semi-supervised Table Detection with Semantic Aligned Matching Transformer. In International Conference on Document Analysis and Recognition (pp. 295-318). Cham: Springer Nature Switzerland.
- Shetty, P.P., Varsha, C.M., Vadone, V.D., Sarode, S. and Kumar, D.P., 2019. Customers churn prediction with RFM model and building a recommendation system using semi-supervised learning in retail sector. Int. J. Recent Technol. Eng.(IJRTE), 8(1), pp.3353-3358.

ADDITIONAL INFORMATION

- Winners of the use-case 'CO2 emission optimization for Grain Fields' at the Smart Farming Hackathon, Fraunhofer IESE, Kaiserslautern. Dec. 2024
- Won the 'HackARthon', a 24-hr AR hackathon conducted by e4Labs, Kaiserslautern, Feb 2023.
- Volunteered at the job fair "Treffpunkt" Kaiserslautern, June 2023 and June 2024.
- Lead a Corporate Social Responsibility (CSR) event - "Introduce a Girl Child to STEM" at Collins Aerospace, Feb 2020.
- Academic Support Volunteer at 'Make a Difference', Bangalore Cluster, 2020
- Headed and volunteered for different fests as a member of the Department of Extracurricular Activities (DECA), MSRIT, 2016-18.
- Completed 2 years of volunteering under the campaign "Take charge. Educate. Empower", 2015-17 and one year as the skill development program head, 2016-17 in National Service Scheme.
- Participated in "2017 IEEE - Women in Engineering: Empowering innovation and leadership qualities" held at Ramaiah Institute of Technology, March 2017.
- Completed a 100-hour certificate course on Astronomy and Astrophysics conducted by MP Birla Institute of Fundamental Research, Dec 2017- 'A' grade.