Debargho Basak

Master's Student

Motivated, hardworking, and driven computer science Master's Student with a track record in Software development and Machine Learning. Ability to identify business needs to develop software solutions to real-world problems. Seeking an opportunity to gain further experience in Machine Learning to drive business effectiveness through AI.

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WORK EXPERIENCE

Perception Developer Intern : Autonomous Driving
MAN Truck & Bus SE
01/2023 - Present   *Munich, Germany*
Achievements/Tasks
- Working on sensor fusion technologies (Camera + Radar + LiDAR) for perception software to make trucks autonomous.

Student Research Assistant
Fraunhofer AISEC
11/2022 - 04/2023   *Garching, Germany*
Achievements/Tasks
- Investigating the effect of incorporating a strong uniform continuity in Deep Learning training mechanisms for greater robustness against Adversarial attacks.
- Designed a novel DL training mechanism that allows for the simultaneous optimization of both trainng loss and estimation of Lipschitz constant/continuity.
- Proposed mechanism was used to train standard 2D and 3D object detection models (YOLO, PointRCNN).
- Benchmarking results on both 2D and 3D Object Detection datasets such as COCO, KITTI; etc.

Natural Language Processing Research Intern
Convaise A.G.
05/2022 - 09/2022   *Munich, Germany*
A Munich based AI startup that provides NLP based solutions for the industry using their no code platform.
Achievements/Tasks
- Developed a SOTA novel clause splitting approach in English and German to be integrated and deployed into the company's NLP software products.
- Implemented an NLP pipeline combining the latest research in the fields of Text Simplification and Open Information Extraction to achieve clause splits using frameworks such as Hugging Face, PyTorch.
- Performed model quantization and pruning to improve performance during deployment.
- Deployed our solution to Kubernetes using Docker.

PROGRAMMING SKILLS

Languages
Python, C++, R, Javascript, MATLAB, Java, ROS

Tools & Frameworks
PyTorch, Hugging Face, Keras, OpenCV, SpaCy, Git, JAX, CUDA, ONNX Runtime

Database
SQL, MongoDB, Apache Spark

Operating Systems
Linux, Microsoft Windows, Ubuntu

Productivity
LibreOffice, Microsoft Office, LATEX

Other:
Kubernetes, Docker, FastAPI, AWS SageMaker, Bash

KEY PROJECTS

Large Scale Differential Privacy Training (10/2022 - 03/2023)
- Designed an end-to-end architecture for medical image (2D and 3D) classification while maintaining the privacy of source data.
- Used DP-SGD (Differentially Private Stochastic Gradient Descent) to quantify the privacy of the training mechanism.
- Proposed architecture achieves parity in image classification performance between Differentially Private and Non Differentially Private models.
- **Frameworks Used :** Python, JAX, PyTorch, OpenCV, CUDA

Overhead Direct Convolutions (10/2022 - 02/2023)
- Implemented an efficient convolution algorithm between 3D and/or 4D tensors to reduce memory overhead.
- Used Overhead Direct Convolutions proposed in Zhang et al., 2018.
- Resultant algorithm reduces memory overhead commonly encountered in convolution layers in deep neural networks.
- **Frameworks Used :** C++ , Makefile

3D LiDAR to Image (10/2022 - 11/2022)
- Created a tool that converts 3D LiDAR point clouds to 2D images.
- Supports several 3D LiDARs and multiple point cloud modalities.
- Can be seamlessly mounted on a ROS workspace for deployment.
- **Frameworks Used :** C++, Cmake

WORK EXPERIENCE

Werkstudent
Siemens

02/2022 - 07/2022   *Munich, Germany*

Achievements/Tasks

- Built a data visualization web app for internal usage within the firm.
- Created active, functional and responsive user interfaces for smooth user experience.
- Built landing pages for different data concepts containing interactive visualizations.
- Integrated an API that fetched, parsed and formatted analytic data and relayed it to React components.

EDUCATION

Msc. Informatics
Technische Universität München

10/2021 - Present   *München, Bayern, Deutschland*

Courses

- **Focus Areas:** Machine Learning, Deep Learning, Computer Vision, NLP and Software Engineering.
- **Relevant Coursework:** Machine Learning, Computer Vision 3, Introduction to Deep Learning, Machine Learning for 3D geometry.

B.E. in Instrumentation And Control Engineering
Netaji Subhas University Of Technology (erstwhile Netaji Subhas Institute of Technology) | University of Delhi

06/2017 - 07/2021   *New Delhi, India*

Courses

- **GPA**: 9.09/10(German equivalent = 1.4).
- **Focus Areas:** Software Engineering, Electronics and Robotics.

KEY PROJECTS

Object-Detection (05/2021 - 06/2021)

- Designed an end-to-end architecture by combining YOLO and DeepSORT to perform real-time object detection, recognition and localization of objects in its camera view.
- Modified YOLOv3 and YOLOv4 to attain fast computations with lesser computational requirements and sub-second inference times.
- Proposed architecture allows for a diverse set of applications based on the detected object (Pedestrian Counting).
- **Frameworks used :** Python, PyTorch, OpenCV, CUDA

PUBLICATIONS

Research Paper

A Comparative Analysis of Intelligent Classifiers for Seizure Detection Using EEG Signals

Author(s)

Debargho Basak, Arshdeep Singh, Upmanyu Das, Priya Chugh, Dr. Jyoti Yadav

22/07/2021

Springer/Advanced Computing and Intelligent Technologies /577-591

https://lnkd.in/esWN7yj

CERTIFICATES

Machine Learning A-Z™: Hands-On Python & R In Data Science (04/2021 - Present)
Credential ID:- UC-2f1eb491-88a3-45df-9c36-adbcfb97e668

INTERESTS/HOBBIES

| Reading | Football | Video Games | Music |

LANGUAGES

English
Native or Bilingual Proficiency

Dutch
Professional Working Proficiency

German
Professional Working Proficiency

Italian
Limited Working Proficiency