

Vedant Bonde

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EDUCATION

Universität des Saarlandes

Master of Science in Data Science and Artificial Intelligence

Oct. 2021 – May 2024

Current Grade: 1.8

University of Delhi

Bachelor of Technology in I.T and Mathematics

Jul. 2017 – Jul. 2021

Overall Grade: 1.5 (Rank: 1st/45)

COURSEWORK

Courses: High-Level Computer Vision, Reinforcement Learning, Computer Graphics, Attacks Against ML Models, Neural Networks, Statistics w/ R, Human-Computer Interaction, Compiler Design, Automata Theory

Awards: President of India Gold Medalist, ACM-ICPC Programming Contest Regionals (Honorable Mention)

RELEVANT EXPERIENCE

Machine Learning Engineer (Thesis)

Mercedes-Benz AG

September 2023 – May 2024

Stuttgart, DE

- Developed OOD data generation pipeline for realistic traffic scenarios using Generative Models on Argoverse data.
- Utilized custom wrapper for training local ML projects on Google Cloud Platform utilizing Docker and Flyte.

Machine Learning Engineer

Fraunhofer-Institut für Zerstörungsfreie Prüfverfahren (IZFP)

June 2022 – August 2023

Saarbrücken, DE

- Developed categorical segmentation module for cattle using a U-Net autoencoder achieving 94% precision.
- Processed audio recordings of cattle for Emotion Recognition with Librosa, employing Docker to deploy on GCP.
- Created dashboards using R & Shiny for real-time monitoring and anomaly detection of cattle on time-series data.

Deep Learning Researcher

Deutsches Forschungszentrum für Künstliche Intelligenz (DFKI)

March 2023 – August 2023

Saarbrücken, DE

- Created Multi-Agent Reinforcement Learning environments (MARL) using gym and visualization with Pygame.
- Evaluation of MARL environment using Deep-Q-Networks using Pytorch for measuring ethical decisions of agents.

Research Student

Williams College

June 2020 – June 2021

Williamstown, US (held remotely)

- Worked on an extension of Balls in Bins problem in combinatorial number theory involving restrictions on bins.
- Used SciPy and data analysis libraries to plot and verify probability distributions satisfied by the initial problem.

PROJECTS

Backchannel Estimation using Multimodal Fusion Techniques | *Pytorch, Docker, Google Cloud* May 2023

- Extraction and fusion of facial key points using OpenFace and speech embeddings using Wav2Vec model.
- Utilized transformer models on fused embeddings to determine whether participants agree to speaker's views.

Semantic Text Similarity with Siamese Bi-LSTM Models | *PyTorch, spaCy, Optuna, Git* October 2022

- Used currently available Siamese BiLSTM models on the SICK Dataset for the semantic similarity task.
- Integration of transformer encoder module & SBERT fine-tuning implementation on semantic text similarity task.

TECHNICAL SKILLS

Languages: Python, R, C++, Matlab, MySQL **Libraries:** PyTorch, TensorFlow, pandas, NumPy, ggplot2, dplyer

Developer Tools: Git, Docker, Google Cloud Platform, VS Code, Visual Studio, PyCharm, Tableau, Excel, L^AT_EX

PUBLICATIONS

[1] A. Amer, V. Bonde, and et. al. Backchannel detection and agreement estimation from video with transformer networks. *International Joint Conference on Neural Networks (IJCNN) 2023*.

[2] V. Bonde and J. M. Siktar. On the combinatorics of placing balls into ordered bins. *Electronic Journal of Combinatorial Number Theory, 2020*.