Bhushan Bhagwan Gawde

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EDUCATION

Technical University of Munich — Munich, Germany
Master of Science in Computer Science | **Grade: Distinction** — September 2023
Relevant Courses: Machine Learning, Computer Vision, Deep Generative Models, Deep Learning, Distributed Systems, Cloud Computing
Master's Thesis: 2D Instance Segmentation of Functional Components of Wiring Harness

Veermata Jijabai Technological Institute (VJTI — Mumbai, India
Bachelor of Technology in Computer Engineering | **GPA: 9.44/10** — May 2018

PROFESSIONAL EXPERIENCE

SAP — Berlin, Germany
AI Engineer — March 2024 - Present

- Fine-tuned **Whisper ASR** model on custom dataset using **HuggingFace** and **Python**, achieving recognition accuracy of **82%.**
- Fine-tuned **phi-3-mini-4k-instruct LLM** on custom dataset for use-cases like JSON-based extraction, summarization, and Q&A.
- Developed end-to-end testing framework for different Speech recognition models like **Whisper**, **Wav2Vec2**, **HuBERT**, etc.
- Engineered and Deployed 4 AI services using LLMs, ASR and TTS models from open-source and third-party providers into SAP BTP Cloud Foundry and SAP Kyma runtime using **Docker** and **FastAPI**.
- Built 2 **WebSocket** and **WebRTC**-based POCs leveraging **OpenAI**, **Anthropic** and other APIs for a real-time voice conversational experience. Built 2 **RAG**-based POCs using LLM models like **GPT-4o**, **Gemini 2.0**, etc.
- Contributed to the Architecture concept of a Voice pipeline for **Joule**, SAP's AI digital assistant.

BASF (trinamiX) — Ludwigshafen, Germany
Machine Learning Engineer — September 2023 - February 2024

- Research on Skin Health parameters and their correlation with IR images.
- Fine-tuned **EfficientNetV2** and **Vision Transformer** for Skin type classification and Roughness Estimation in **PyTorch**.

Samsung R&D — Bangalore, India
Senior Software Engineer – AI Computational Imaging — June 2018 – April 2021

- Implemented **deep learning models** for human **semantic** segmentation, human **instance** segmentation, and image **matting**. Experimented with **MobileNet**, **DeepLabv3**, and **EfficientNetV2**. Deployed the models on Galaxy S21, Note21, A51-5G.
- Received '**Samsung Citizen Award**' for efficiently leading a group of 3 to handle performance issues encountered during end-to-end solution deployment and commercialization.
- Designed and developed human portrait-based artistic effects under the **Selfie Camera** '**Portrait**' mode in Samsung's **flagship** Galaxy smartphone models like Galaxy **S20**, Galaxy **Note 20**, Galaxy **S21**, etc.
- Collaborated on the development of Android native libraries in C++ using **Image Processing** concepts. Developed 'Temporal Smoothing' and 'Depth-based Bokeh Rendering' native modules in C++ that helped achieve a **DXOMARK** score of **70** for Bokeh on **Galaxy S21** model and its variants. Experimented with different techniques for segmentation mask refinement.
- Restructured the solution pipeline using **ARM Neon** and **OpenCL** to achieve real-time KPI. Improved the runtime by **45%**.
- Resolved **200+** unique production issues encountered during the development process with Resolution Rejection Ratio < **3%**.
- Travelled to **Samsung HQ** in **South Korea** for 3 months for carrying out the commercialization activities related to the Portrait mode on Samsung's flagship and innovative smartphone series. (S series, A series, M series, etc.).
- Engaged in regular cross-functional collaboration with Image Quality, Camera Framework, Camera App, and QA teams across global locations like South Korea, China, and Vietnam.

Samsung R&D — Bangalore, India
Software Engineer Intern – Vision Research — May 2017 – July 2017

- Studied **one-stage** and **two-stage** object detection networks extensively.
- Trained '**YOLOv1**' and '**YOLOv2'** on **KITTI** dataset for real-time pedestrian detection. Improved the mAP by **23%**.

TECHNICAL SKILLS

- **Programming languages**: C, C++, Python.
- **Machine Learning frameworks**: PyTorch, scikit-learn, NumPy, Pandas, OpenCV, Hugging Face, LangChain.
- **Machine Learning paradigms**: Regression, Classification, Clustering, Neural Networks (CNN, LSTM, Transformers), Generative Models (Variational Autoencoders, GAN), LLMs, AI Agents, RAG.
- **Web and Cloud Technologies**: FastAPI, Docker, Kubernetes, AWS (S3, SageMaker and EC2).
- **Other Development tools**: Git, Perforce, OpenCL, Arm Neon Intrinsics (SIMD), Android NDK, Malloc debug, Gperftools.

PUBLICATIONS

- "A fast, automatic risk detector for COVID-19", IEEE, 2021. [Link]
- "Opsum: Topic-based opinion summarization and sentiment analysis", IJERA, 2018. [Link]

PATENT

- "Methods and Electronic Device for Processing Image". (Filed), 2022. [Link]