SAHIL BANDAR

"Talk is cheap, show me the neurons." A **Tech Lead AI Engineer & Certified Architect** with 8.5 years of expertise in **Artificial Intelligence, Deep Learning, Agentic AI, GenerativeAI, Machine Learning, NLP, Computer Vision, Image Processing and AIDevOps.** Worked on different **ARM-based** and **x86_64** architectures.

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EXPERIENCE

GlobalEdge (Capgemini Engineering)
Tech Lead Engineer | AIML

May 2017 - PRESENT

- Designed & developed the **Agentic AI platform** for developers which is orchestrator agnostic, to use the framework of choice, like **LangChain, LangGraph, Crew AI, MS Semantic Kernel & MS Autogen.**
- Expertise of working with **Core algorithmic** concepts of **Generative AI & AgenticAI.**
- Expertise with **RAG, Prompting & Memory** concepts for **Generative AI & Agentic AI.**
- Expertise of building the LLM from scratch with Llama & T5 architecture.
- Development of **GenerativeAI Platform** for developers to build & deploy LLM.
- Building the next level capabilities on **GenerativeAI** in the Internal Team.
- Designed the **Agentic SDLC solution** for automated software development.
- Designed the **Agentic Cyber Security** solution for building the secure Edge Platform which **avoids vulnerabilities & attacks**.
- Having ample knowledge on building the LLM Models for different solutions like **Software Debugger, Software build automation, QnA models for domain specialized query**.
- Hands-on with **Image Processing** & **Computer Vision Algorithm Development in C.**
- Ample Knowledge on **Robotics platform, and Software stack for Robotics, ROS/ROS2.**
- Ample knowledge with Building **the robotics solutions for Navigation, Mapping, Localization, Path Planning, Motion Planning.**
- Having ample knowledge of **ROS Navigation Stack.**
- Good hands-on practice on **ROS1 & ROS2 for the VSLAM, SLAM, ORBSLAM.**
- **Having ample knowledge on Open Robotics Middleware Framework (OpenRMF).**
- **Bringing Robotics Navigation, Mapping and Localization on Web UI.**
- **Ample knowledge of the FreeFleet management with robotics stack and middleware framework like OpenRMF.**
- Having good expertise in implementing **heterogeneous computing algorithms** for optimizing **Image Processing & Computer Vision algorithms** for **GPU/DSP/ FPGA/CPU** with **DPC++(SYCL) /OpenCL/ Cuda**.
- Hands-on with the **Deep Learning algorithm development** in C (Conv2D, SeperableConv2D, Activation functions, BN, Pooling Ops)
- Ample Knowledge of the **Robotics platform**, and Software stack for **Robotics, ROS/ROS2**.
- Ample Knowledge of **AutonomousCar** Building Software Stack, Like

SKILLS

Machine Learning | Deep Learning | Agentic AI | Generative AI | RAG | Prompt Engineering | Image Processing | Computer Vision | Audio Processing | Robotics | DL Algorithm Development | Huggingface | Heterogeneous Computing | DPC++ | SYCL | CUDA | OpenCL | EmbeddedAI | EdgeAI | AIDevOps | Reinforcement Learning | ADAS | V2X | AI on Cloud | ARM Platform | CUDA | GPU | DSP | ISP | GStreamer | FFMPEG | Yocto | Docker | KubeFlow | Kuberenetes | Tensorflow | Keras | Darknet | PyTorch | ROS/ROS2 | ONNX | TFLite | TensorRT | Qualcomm SNPE | OpenVINO | Intel NCSDK | Ambarella CVFlow | AWS Sagemaker | AWS Sagemaker Neo | TVM | Scikit Learn | OpenCV | Numpy | Pandas | Make | GDB | CMAKE | BitBake | CLang | GCC | LLVM | Autoware.AI | NVidia DriveWorks | ARMNN | DL Framework Development | CV Framework Development | FastCV | DL Compiler Stack

PUBLICATIONS

SCOPES-2024 - *Computer Vision/Deep Learning*

Optimizing Machine Learning Models Using Tensor Virtual Machine for Embedded CPUs

Author(s)

Sahil Bandar, Christophe Fava Rivi, Ashish Tiwari, Sahil Makandar

Published on IEEE -
https://ieeexplore.ieee.org/document/10990538

PRIS-2021 - *Computer Vision/Deep Learning*

A Deep Learning model capable of producing heatmap probabilities for Characters in Natural Scenes.

Author(s)

Rakesh Sankar, Ashish Tiwari, Sahil Makandar, Allen Joshey

Published on ACM Digital Library.
https://dl.acm.org/doi/abs/10.1145/3480651.3480662

CVIP-2021 - *Computer Vision/Deep Learning*

ABNet - AdultBaby Net.

Author(s)

Sahil Bandar, Ashish Tiwari, Sahil Makandar, Allen Joshey

Published on Springer & IIT Roorkee.
https://link.springer.com/chapter/10.1007/978-3-031-11346-8_24

Nvidia DriveWork, and **Autoware.AI.**
- **Deep Learning Model Compilation** for different platforms using **TVM**.
- Having good knowledge of different Optimizations Framework like **TFLite**, **OpenVino**, **SNPE**, **ONNX**, **Ambarella CVFlow**, **Neo**, **ARMNN**, **eIQ.**
- Having a Good understanding of **Deep Learning Compiler Stack** on the Front end & Back end.
- Hands-on with implementing the AI Solution on the Android platform with NDK.
- Implemented **Computer Vision Algorithms** like **Image Reading, resizing, Crop, Template Matching, Steganography, Color Transformation, Edge Detection, Blur Filter, LBPH Face Recognition, and Haar Cascade algorithms in C.**
- Implementing **Minimal Computer Vision Library in C** to remove open-source dependencies.
- Ample knowledge of porting DL & CV based solutions on Edge Devices for different architectures like (**armv7l, arm64-v8a, aarch64, armv7-neon**, **Jetson Nano/TX2** Platforms, **Snapdragon** Platforms, **Ambarella CV22**, NXP **iMX6x, iMX7x, iMX8x** platforms, **Rockchip 3568, 3399 Pro, STM32, Robotics RB5/RB3, QCS6xx, Dragonboard 410C)**.
- Developed different **State of the art** solutions from **Scratch** like **Object Detection**, **Semantic Segmentation**, **OCR**, **Face Recognition, Face Detection, Action recognition, Keypoint Recognition, Object Classification** Etc..
- Hands-on with Computer Vision using **OpenCV**.
- Hands-on with different Deep Learning frameworks like **Tensorflow**, **Keras**, **Darknet**, **PyTorch** Etc.
- Implemented the **Deep Learning Framework in C** for inference on Edge Devices.
- Ample Hands-on knowledge of **Qualcomm's SNPE SDK** to integrate and infer the deep learning models on supported Snapdragon devices.
- Hands-on with **Linear Regression, SVM(SVR), KNN, Decision Tree, Random Forest, Logistic Regression, SVM(SVC), and K Mean Clustering**.
- Hands-on with **ANN, CNN, RCNN, RNN, LSTM and Transformer.**
- R&D on different Object Detection algorithms like **SSD, MobileNetSSD, Yolo series, RCNN, Fast RCNN, and Faster RCNN**.
- R&D on different Image Segmentation Algorithms like **UNET, DeepLabV3, and Mask RCNN**.
- Implemented the Solution for OCR solution.
- Completed 4 months of training in **C, Linux Internal, Toolchain, Kernel Compilation & Configuration, Kernel module development, Data structure**.

PROJECTS

Alpha – AgenticAI Platform (09/2024 - Present)

- Working on Capgemini's Internal Agentic AI Platform development.
- Architecture and designed platforms for Agentic AI for developers.

AWARDS & ACHIEVEMENTS

Certified Architect (07/2025)
For presenting architect skills in field of Artificial Intelligence.
Issued by Capgemini Global Certification Board

Innovation Award (11/2024)
For development of GenAI & AgenticAI platform.
Issued by Capgemini-Engineering

Falcon Hackathon for Best Engineering solution of 2023 (03/2023)
#2nd Rank.
Issued by Capgemini-Engineering.

Global Data Science Challenge 2022
In the Top 25 among 400 teams (#18)
Issued by Capgemini-Engineering.

Limelight Award (06/2020)
Issued by GlobalEdge Software Limited

Star Team Award (06/2020)
Issued by GlobalEdge Software Limited

Young Turk Award (08/2019)
Issued by GlobalEdge Software Limited

Terrific Three Award (12/2020)
Issued by GlobalEdge Software Limited

Best Team Award (08/2017)
Issued by GlobalEdge Software Limited

4 Time National Level Project Competition Winner (12/2016)
Issued by Multiple Colleges under Shivaji University

3 Time State Level Project Competition Winner (12/2016)
Issued by Multiple Colleges under Shivaji University

Project of the Year Award (2016-2017)
Issued by DKTE's TEI College under Shivaji University

CERTIFICATES

Generative AI with LLMs

- Developed the Noval approach on top of Agentic Memory Concept.
- Designed the solution for long term memory with its types.
- Build the framework with Langgraph, Autogen, CrewAI & Semantic Kernel where developers can select the framework of their choice.
- Developers can create the entire design flow of the Agentic AI use case and build the use case they want.

Gyan – Generative AI Platform (09/2022 - Present)

- Working on Capgemini's Internal Generative AI Platform development.
- Architecture and designed platform for Generative AI for developers.
- Developed the Model finetuning & scratch model training framework.
- Developed the Model Evaluation & Deployment framework.
- Built the feature for optimizing the compiling the LLMs for Edge devices using TensorRT.
- Design framework for RAG Pipeline creation & building the prompt library.
- Designed various use cases and deployed under platforms marketplace.
- Build the Data & Model repository to maintain the models & data of user safely.

WiFi – GenAI Log Analysis for Google Wifi (09/2022 - Present)

- Finetuned the model for Wifi log analysis for hostapd & pcap file.
- Compiled the model with TensorRT which is capable of processing 1.5 million logs with 200 GB of PCAPS within 11 minutes with GenAI.
- Designed the solution to finding the root cause and justifying the problem with proper reason code.
- Reduced the manual engineer's efforts of 4-5 hours work to 11 minutes.
- Automated report generation with binary dump of failed PCAP.
- Performs the analysis of disconnect, disassociation and de-authentication from AP.

Other GenAI & Agentic AI Client Engagements

- Agentic SDLC Framework
- Code Conversion from Delphi to C#
- Agentic AI cybersecurity agent.
- Data dog analyzer
- Medical Device log analyzer & Jeera automation
- Ticket management for Security incidents.
- Unit Test case Generation
- Diagrams to Test Scenario
- User Stories to test scenarion
- Code Review & Correction Agent

Robotics Development (06/2021 - 12/2024)

- Working on Qualcomm Robotics platform for building the different Robotics use cases.

Issued by Deeplearning.AI

CNN in Tensorflow
Issued by Deeplearning.AI

Introduction to Tensorflow for AI, ML & DL
Issued by Deeplearning.AI

NLP in Tensorflow
Issued by Deeplearning.AI

Docker Essential & Building Containerized Application
Issued by Coursera Project Network

Tensorflow Serving with Docker for Model Deployment
Issued by Coursera Project Network

Object Localization with Tensorflow
Issued by Coursera Project Network

Deep Learning with PyTorch: Building an AutoEncoder
Issued by Coursera Project Network

Big Query basic for Data Analysts
Issued by Google Cloud

Sequences, Time Series and Prediction
Issued by Deeplearning.AI

DeepLearning.AI Tensorflow Development Specialization
Issued by Deeplearning.AI

Deep Learning with PyTorch: Neural Style Transfer
Issued by Coursera Project Network

EDUCATION

Bachelor of Engineering in Information Technology
DKTE, Textile & Engineering Institute (Shivaji University)
June 2014 - May 2017 | 69.49 %

Diploma in Information Technology
SIT Polytechnic (MSBTE, Mumbai)
August 2011 - May 2014 | 68.13 %

- Integrated the ROS1 & ROS2 on Robotics platforms like RB3 & RB5.
- Implemented the AutonomousRB5 use case on the RB5 platform which is a SMART CAR prototype use case (Showcased in AWS re:Invent - 2021).
- Auto object avoidance on RB3.
- Implemented the Voice enabled Robot.
- Implemented Face recognition and tracking.
- Implemented the Gesture based robot control.
- Implemented the Simulator using Unity for Reinforcement Learning for Lane Following.
- Integrating the Autoware.ai on RB5.

CopyPipeline development for Printer/Imaging (06/2022 - 12/2022)

- Building the end-to-end copy pipeline for Printer & Imaging devices.
- All Computer Vision algorithms have been developed for Intel's GPU/FPGA cards using DPC++(SYCL).
- Code migration from CUDA to SYCL.
- Achieved performance of around 1.5x faster than Original (C for Metal development).
- Found issues or pitfalls in pipelines, optimized & built various tools for picking proper workgroup & Work Items for computation configuration.

Smart Camera Development (01/2022 - 06-2024)

- Building the Object Detection Model.
- Optimizing the model for different platforms like CoreStone1000, RK3399 Pro, and NXP iMX8M Plus.
- Integration of CSI2-MIPI Camera with Platform.
- Building containerized pipelined architecture.
- Building the cloud infrastructure for solution deployment with AWS & Alibaba Cloud Services.
- Deployed & Orchestrated solution with Kubernetes & Greengrass.

Smart TV Gesture Control (10/2021 - 12/2021)

- Building Gesture recognition & Classification Model.
- Building Face Recognition model.
- Porting Solution on a Qualcomm QCS610 chipset.
- Building NDK Based Android Application for analyzing & controlling the TV at backend.
- Face Recognition based unlock system.

Internal Project (12/2017 - Present)

- AI DL Framework Development
- Computer Vision Library Development
- R&D on Research paper and Publishing own research.
- AI Enabled Data Creation Tool
- DL Compiler Studies
- R&D on DTypes, Optimization of Convolution Ops/ DL Ops.

High School
SGV, Kurundwad
June 2005 - May 2011 | SSC - 72.00 %

PROFILES

Github (GITHUB/sahilbandar)
LinkedIn (LINKEDIN/sahil-bandar)

Youtube URL for Final Year Project Demo:
https://www.youtube.com/watch?v=mZ6mDGDUN3Y

PROGRAMMING LANGUAGES

- C
- C++
- Python

OPERATING SYSTEMS

- Linux
- Windows
- Open Embedded

- R&D on Principle of Autonomy (Autonomous CAR / Robotics)
- State of the Art Model Development.

AI on Qualcomm Platforms (01/2018 - Present)

- Building Deep Learning models from scratch.
- Compiling the model using SNPE Tool.
- Developing UDO for unsupported layers.
- Quantizing models, Performance improvisation.
- Releasing the solution on Open Source Platforms like GitHub.
- Leveraging all the Qualcomm tools to fully optimize the solution which is building
- Achieved 3 projects in the Top 5 project of 2019 in QDN.
- Worked on Different platforms from qualcomm like, SD820, SD821, SD835, SD855, QCS610, QCS605, Dragonboard 410C.
- Implemented use cases like portrait mode, driver assistance on android, Front object detection in the car, Facial Expression recognition, Gesture Recognition.

AI-Benchmarking on CVFlow Ambarella (06/2021 - 09/2021)

- Compiling the different set of Open Source Model for CVFlow Architecture of Ambarella CV22.
- Calculating & Benchmarking different parameters like Inf./S, Power Consumption measurement, Quantized performance on FP16, INT8. Batched data performance, Model Size. Accuracy.

AI-Benchmarking on NVidia TX2/Nano Platform (01/2021 - 05/2021)

- Compiling the 20+ Open Source model with TensorRT.
- Building the custom C++ function for Unsupported layers.
- Calculating & Benchmarking different parameters like Inf./S, Power Consumption measurement, Quantized performance on FP16, INT8. Batched data performance, Model Size. Accuracy.
- Benchmarking the model performance with Different Power Consumption mode of Nvidia Jetson platform.
- Building custom Power Mode in Jetson Platform.
- Implemented Plug & Play End-to-End AI Benchmarking Tool for NVidia Jetson Platform.

Smart CITY (01/2019 - 12/2019)

- Implementing different state of the art models for Smart Camera Use Case.
- Audio based classification model for Gunshots detection.
- Group of people detection.
- Abandoned Object Detection.
- Zebra Crossing analysis.

LANGUAGES

English, Hindi, Marathi

IDE & Tools

Vim | Visual Code | Atom | Spyder | Jupyter Notebook | Nano | Minicom | Putty

- License Plate Detection.

AI on Intel Platform (01/2018 - 03/2018)

- Working on the AIDevCloud platform of Intel, Analyzing the training performance of Model.
- Compiling the models for Intel Platform using OpenVino.
- Compiling the models for Intel Movidius VPU.
- Performing the Model Inference on Intel CPU/GPU/VPU.

ADAS System (10-2017 - 12 - 2017)

- Implemented the solution for the ADAS System which will detect the front object of the car and give the alert to the Car Driver.
- The Object Detection model was trained for 6 specific objects like Pedestrian, Car, Truck, Bus, Motorcycle & Bicycle. Trained the model using YoloV2.

Declaration: I hereby declare that the above particulars of information and facts stated are true, correct and complete to the best of my knowledge and belief.