Resume Information

# Personal Information

Name: Sayan Chaudhuri

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Other Links:

# Resume Headline

Data Scientist with Expertise in Deep Learning, Computer Vision, Reinforcement Learning, and Scientific Machine Learning.

# Profile Summary

Data Scientist with expertise in Python, deep learning, and reinforcement learning, specializing in scientific machine learning and computer vision research. Experienced in NLP, generative AI, LLMs, and building RAG chatbots. Proficient in end-to-end project leadership, cloud deployment (Microsoft Azure), and developing web apps for enhanced efficiency. Filed a global offensive patent and currently pursuing multiple research projects. Passionate about advancing cutting-edge AI solutions in research-focused roles.  
  
  
As a Data Scientist at Mercedes-Benz R&D India, I’m focused on advancing electric vehicle technology through AI and machine learning. With a Bachelor’s in Electrical Engineering and a Master’s in Aerospace Engineering from IISc, I bring a strong foundation in computational modeling and engineering principles.  
  
At Mercedes-Benz, I lead impactful projects, including the development and patenting of Physics-Informed Neural Networks (PINNs) for optimizing battery cooling and enhancing system efficiency. My work also includes designing anomaly detection models to improve EV charging reliability and creating a full-stack application to streamline EVSE testing processes.  
  
My expertise spans machine learning, deep learning, and full-stack development, with deep proficiency in Python, PyTorch, and mathematical modeling. I’m skilled in data analytics, computer vision, scientific ML, and reinforcement learning, and I’m expanding my knowledge in Transformers and Large Language Models.  
  
Outside of work, I stay inspired by exploring advancements in AI, reading non-fiction, and catching up with friends—activities that keep me balanced and energized.

# Experience

Organization: Mercedes Benz Research and Development India (MBRDI)

Start Date: 2023-08-04

End Date: 2025-02-01

Description: PGET Data Scientist | Mercedes-Benz Research and Development India August 2023-Present   
Optimized battery cooling by designing a Physics-Informed Neural Network to predict cooling plate interface temperature with 0.85% MAPE.   
Developed an AI-powered inferencing tool on Azure, reducing hardware-validation test report inference time by 60X, saving thousands monthly.   
Built a cloud-hosted web solution integrating 3rd-party APIs, streamlining EVSE testing and reducing annual costs by millions of Euros.   
Supported cross-functional collaboration by developing statistical models and visualizations for test case prediction, achieving 97.3% accuracy.   
Guided 2 external consultants on strategic alignment, promoting leadership, collaboration, and continuous learning in AI/ML projects.

Skills Learned: Python, Full-Stack development, Azure, Deep Learning, Scientific-machine learning, physics informed neural networks, research, coding, vs code, github, git

# Education

School: Indian Institute of Science, Bangalore, MTech

Major: Aerospace Engineering

Start Date: 2021-08-09

End Date: 2023-06-30

Skills Learned: Deep learning, data science, machine learning, physics, mathematics, coding, data analytics, computer vision, NLP, time series forecasting, robotics,

Courses Taken: Computing for AI and ML | Numerical Optimization | Robotic Perception | Statistics | Data Analytics | ML for Signal Processing

Thesis: Proposed a metacognitive Mask R-CNN model with a novel training strategy featuring dataset-agnostic binary loss selection and SpatialDropout2D regularization to improve model generalization and prevent overfitting. Integrated the Amplitude Phase Recombination technique for data augmentation, which led to a 1.5% increase in detection accuracy and a 2.2% improvement in segmentation on the NWPU VHR-10 dataset. The model demonstrated enhanced robustness, with a 9.5% increase in detection and 6.5% in segmentation under extreme brightness conditions.

School: BIT Sindri

Major: Electrical Engineering

Start Date: 2017-08-04

End Date: 2021-05-31

Skills Learned: Mathematics, Statistics, Electrical Engineering,

Courses Taken: Advanced Mathematics | Soft Computing Techniques | Analog and Digital Electronics | Data Structure and Algorithms | Soft Optimization Techniques

Thesis:

# Technical Skills

Skill: Python

Proficiency: 4

Skill: deep learning

Proficiency: 5

Skill: machine learning

Proficiency: 5

Skill: computer vision

Proficiency: 5

Skill: natural language processing

Proficiency: 2

Skill: mathematics

Proficiency: 4

Skill: physics

Proficiency: 4

Skill: SQL

Proficiency: 5

Skill: Pytorch

Proficiency: 5

Skill: Tensorflow

Proficiency: 5

Skill: numpy

Proficiency: 5

Skill: pandas

Proficiency: 3

Skill: scipy

Proficiency: 2

Skill: open ai gym

Proficiency: 3

Skill: microsoft azure

Proficiency: 4

Skill: git

Proficiency: 4

Skill: docker

Proficiency: 1

Skill: fastapi

Proficiency: 4

Skill: reinforcement learning

Proficiency: 5

Skill: Exploratory data analysis

Proficiency: 4

Skill: statistical modelling

Proficiency: 3

Skill: research

Proficiency: 5

Skill: communication

Proficiency: 5

Skill: critical thinking

Proficiency: 5

Skill: detail oriented

Proficiency: 5

Skill: problem solving

Proficiency: 5

# Languages

Language: english

Proficiency: 5

Language: hindi

Proficiency: 5

# Certifications

Certification: Microsoft Certified: Azure Fundamentals

Duration: 2 months

Certification: Deep Learning Specialization by DeepLearning.AI(Coursera)

Duration: 6 months

Certification: Modern Reinforcement Learning: Actor-Critic Agents and Deep Q Agents by Udemy

Duration: 2 months

Certification: Deep Neural Networks with PyTorch IBM Skills Network by IBM(Coursera)

Duration: 1 month

# Patents

Patent: Global Offensive Patent on Battery-Cooling Plate interface temperature prediction using Physics Informed Neural Networks.

Patent Date: 2024-08-31

# Publications

Publication: (To be published) Domain generalization for environmental uncertainties using Metacognitive Mask R-CNN

Publication Date: None

Publication: (To be published) Symbolic Multi-Architecture Regression Technique embedded within PINNs for compressible fluid flows.

Publication Date: None

# Hobbies and Interests

Singing, Chess, Reading Non Fiction