

# Dishantkumar Sutariya

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## SUMMARY

Recent master's graduate in **Medical Image and Data Processing** from FAU Erlangen Nuremberg with 2 years of hands-on experience in deep learning and machine learning applications across prediction, segmentation, generative diffusion, and clinical model evaluation; delivered AUC 0.84 on chest Xray diagnostics and a dice 0.86 in energy-level image generation. Built and shipped Meval, a python toolkit with interactive plotly dashboards, cutting manual review time by 8 hours/week and enabling rigorous performance analysis in research settings.experienced in **PyTorch, Transformers, UNet, SimpleITK, DVC, Docker, and MLflow** for reliable healthcare AI delivery.

## EXPERIENCE

**Fraunhofer Institute for Digital Medicine MEVIS**.....  
Working Student December 2024 - September 2025, Bremen, Germany

**Meval Statistical Toolbox**

- Engineered a Python-based statistical toolkit to assess ML model fairness and performance rigorously.
- Implemented advanced validation metrics, including AUROC, Precision-Recall Gain (PRG), and uncertainty estimation with multiple comparison corrections, to identify and quantify performance disparities.
- Developed interactive Plotly dashboards, enabling faster bias reviews and saving 8 hours/week of manual analysis.
- Coordinated a MICCAI 2025 submission timeline across authors, versioned experiments in DVC, and de-risked deadlines with a validation checklist resulting in a clean, reproducible paper package on first submission.

**Thesis**  
Improving Generalization and Robustness of Chest X-ray AI Models: Preprocessing Methods to Mitigate Racial Bias

- Implemented lung segmentation/masking and intensity normalization (CLAHE, histogram matching) to reduce spurious correlations and site/device shift.
- Achieved state-of-the-art performance with an AUC of 0.84 for chest diagnostic diseases, comparable to existing leading models.
- Used transfer-learning approach (freeze encoder of diagnostic head) yielded race-prediction scores of 0.74; applying CLAHE reduced this to 0.73 and lung masking further to 0.71, indicating reduced encoding of race information.
- Integrated model calibration(Isotonic Regression) to improve fairness and reliability in real-world deployment scenarios.

**Maruti Techlabs**.....  
Machine learning Intern August 2021 - July 2022, Ahmadabad, India

- Resolved critical class imbalance in the vehicle insurance dataset by implementing SMOTE, which improved the F1-score by 10% and reduced false negatives by 8%.
- Performed exploratory data analysis and feature importance evaluation on a vehicle insurance dataset of 50,000+ records, identifying Vehicle Damage and Policy Type as top predictors, improving model accuracy by 12 %.
- Conducted a comparative analysis of Logistic Regression, Random Forest, and XGBoost, identifying XGBoost as the optimal model archived 92% accuracy.
- Boosted overall model accuracy by 6% through systematic hyperparameter tuning and 10-fold cross-validation.

## EDUCATION

**University of Erlangen-Nuremberg** Erlangen, Germany  
Master of Medical Engineering - Medical Image and Data Processing  
GPA: 2.2/5.0

**Gujarat Technological University** Gujarat, India  
Bachelor of Engineering - Computer Engineering  
GPA: 1.7/5.0

## Projects

**University of Erlangen-Nuremberg** Erlangen, Germany  
April 2024 - November 2024

**Diffusion Model-Enabled Energy Level Transformation in Photon Counting CT (PCCT)**

- Engineered a conditional diffusion model in PyTorch with ViT-based conditioning to transform energy-level image representations in Photon Counting CT (PCCT).
- Used multi-objective loss (MSE, SSIM, perceptual loss) to optimize pixel accuracy, structural integrity, and visual fidelity.
- Achieved improved energy-level consistency and material discrimination in energy-resolved PCCT reconstructions.
- Reached Dice score of 0.86 for energy-level image generation, indicating high-quality reconstructions.

## SKILLS

**Programming:** Python, Java, SQL  
**ML& DL:** Scikit-learn, Pandas, NumPy, Matplotlib, Plotly, PyTorch, TensorFlow, Opencv, CNN, Diffusion Model, Transformers (ViT), U-Net

**Medical Imaging:** CT, X-ray, MRI, PCCT  
**Medical Packages:** DICOM, NIfTI, Pydicom, SimpleITK  
**DevOps:** Docker, GitLab, Git, Weights & Biases, DVC, and MLflow

**Soft Skills:** Resilience, Adaptability, Collaboration & Teamwork, Time Management

## LANGUAGES

- English (Advanced - B2)
- German (Beginner - A2)
- Hindi (Native)
- Gujarati (Mother tongue)

## Publications

**Sutariya, D., Petersen, E. (2026). meval: A Statistical Toolbox for Fine-Grained Model Performance Analysis.** In E. Puyol-Antón, et al. (Eds.), *Fairness of AI in Medical Imaging* (Lecture Notes in Computer Science, vol 15976). Springer, Cham. DOI: 10.1007/978-3-032-05870-6\_19

- Developed 'meval', a statistical toolkit designed for in-depth analysis of AI model performance metrics in medical imaging applications.
- Addressed critical issues of fairness and bias in AI systems.

## Awards and Achievements

- **Poster Award**, Workshop Fairness of AI in Medical Imaging (FAIMI) at MICCAI 2025. *meval: A Statistical Toolbox for Fine-Grained Model Performance Analysis.* (Authors: Dishantkumar Sutariya, Eike Petersen)

**Siemens Healthineers D&A Summer Challenge**.....  
1st Place Winner September 2023  
Forchheim, Germany

- Participated in a 2-day hackathon focused on image registration of chest X-rays to a standard lung, a critical task for monitoring lesion distributions.
- Acquired fundamental skills in image registration and data analysis under the guidance of industry experts.
- Collaborated with a team to develop and present a solution, ultimately securing 1st place through democratic voting.