Dr. Mathew Francis

Senior AI Researcher

About Me

I am a Computer Vision Researcher with over five years of industrial experience in deep learning, computer vision, and product development. My work spans algorithm development, model optimization, and end-to-end system design, with a focus on creating scalable and efficient solutions for critical applications such as medical imaging, autonomous systems.

Contact

Kottayam, Kerala, INDIA
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Languages

English, Hindi, Malayalam, Tamil, Basic German

Skills

Programming : Python, C++, Java, MATLAB, Shellscript, SQL, HTML, CSS, Latex

Objective

I am actively looking to collaborate with researchers, scientists, and engineers in both academia and industry to drive innovation in AI. I am passionate about leveraging machine learning, computer vision and deep learning to create innovative solutions and products that have tangible, positive impact on society.

Expertise

Machine Learning, Image Processing, Computer Vision, Deep Learning, LLM

Experience

Senior AI Researcher: Kaliber.ai, *2023 - present*
Leading the research team that developed AI based sugical navigation application and LLM based chat aplication. Worked on MRI data as well as 3d models for synthetic data generation and navigation.

Data Scientist: **Kaliber.ai,** *2019 – 2023*
Research and development of AI based tools based on segmentation, tracking, classification, clustering, matching etc.. for surgical application development. Responsibilities include data preparation, data labeling, noise removal, model development and testing etc..

- Segmentation models for anatomy
- Tracking on surgical video
- Clustering for knowledge discovery

Teaching Assistant: **IIT Guwahati,** *2015-2019*
Machine Learning and Computer Vision courses

Teaching Assistant: **NIT Rourkela,** *2013-2014*
Electronics and Communication courses

Project Engineer : **Wipro Technologies**, *2009-2010*
Software testing of retail data warehousing applications.

Education

Ph.D in Computer Vision, **Indian Institute of Technlogy Guwahati,** India, *2014-2023* , Thesis:Visual Object Tracking In Dynamic Scenes

M.Tech. in Electronic Systems and Communication, **National Institute of Technology Rourkela**, India, *2012-2014*, Thesis: Face Recognition

B.Tech. in Electronics and Communication, **Mahatma Gandhi University**, Kerala, India, *2004-2008*

Libraries : PyTorch, Keras, Tensorflow, OpenCV, Scikit-learn, PyVista, HuggingFace

MLOps : Microsoft Azure**, A**mazon SageMaker

DevOps : Docker, Git, GitHub, GitLab

Hobbies

Reading, Listening to Music

Certifications

- *Coursera **:** Generative AI with Large Language Models, 2024*
- *Microsoft Certified: Azure AI Fundamentals, 2023*
- *Coursera **:** Introduction to Generative AI, 2023*
- *eQMS: Design Control, Risk Management, 2022*
- *Coursera **:** Structuring Machine Learning Projects, 2019*
- *Coursera **:** Introduction to tensorflow for Artificial Intelligence, Machine Learning and Deep Learning, 2019*
- *Coursera **:** Neural Networks and Deep Learning, 2019*
- *VSkills Certified HTML Designer, 2011*
- *Sun Certified Java Programmer (SCJP), 2009*

Publications

- Siamese Fully Convolutional Tracker with Motion Correction, M Francis, P Guha, 2020 25th International Conference on Pattern Recognition (**ICPR**), *2021*
- Visual tracking with breeding fireflies using brightness from background-foreground information, P Kate, M Francis, P Guha, 2018 24th International Conference on Pattern Recognition (**ICPR**), *2018*
- Object Tracking with Classification Score Weighted Histogram of Sparse Codes, M Francis, P Guha, Pattern Recognition and Machine Intelligence:(**PReMI**), *2017*
- Tracking under scaling and rotations using stochastic mean shift, R Rajesh, M Francis, P Guha, 2015 Annual IEEE India Conference (**INDICON**), *2015*
- PD-Shift: Patch Detector Shift based Tracker, M Francis, R Rajesh, P Guha, Fifth National Conference on Computer Vision, Pattern Recognition (**NCVPRIPG**), *2015*

Achievements

- ➔ Program Committe Member of Conference EAIS 2024
- ➔ Student Organizer and Web Manager for ICVGIP 2016 at IIT Guwahati
- ➔ Contributed to VOT Toolkit codebase repository used in tracking algorithm evaluation