

Suraj Pai

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EXPERIENCE

Research Scholar

AIM, Harvard Medical School and Mass General Brigham [📍](#)

Aiming to contribute novel applications of technology to the field of medicine, my work lies at the intersection of state-of-the-art advancements in both these fields. My main focus revolves around identifying Artificial Intelligence (AI) based biomarkers to help promote innovative clinical practices such as precision medicine.

01/2022 – present
Boston, USA

Student Research Assistant

MAASTRO Clinic

Orchestrated research and implementation of,

- 3D U-net based segmentation networks for CT images. The use-cases explored were nodule segmentation in lung cancer screening CTs and, organs-at-risk and tumour segmentation in radiotherapy planning CTs.
- Enhancement of cone-beam CT scans to CT-like quality for adaptive radiotherapy applications using unpaired image-to-image translation, namely the CycleGAN.

Focus Areas: Data-driven training optimization; Downstream clinical evaluation; Integration into clinical workflows; Stability improvement of deep learning models through specialized loss design

12/2019 – 07/2021
Maastricht, NL

Machine learning R&D Engineer

BlinkIn [📍](#)

Initiated AI implementations for an automated virtual customer support engine. Played a key role in transforming the customer support pipeline from end to end video streaming to a layered intelligence pipeline by integrating object detection, image classification, action detection and task suggestions. Through these additions, BlinkIn was able to successfully run a pilot for a visual road assistance bot with ADAC, Munich.

06/2018 – 08/2019
Hyderabad, IND

Associate Digital Image Processing Engineer

Cognitive Machines Software Solutions [📍](#)

Developed and worked with implementation of a proprietary Image Processing Studio. Contributed largely to the pipeline with object detection, emotion recognition, facial recognition, feature detection and shape estimation modules across Android, iOS and Edge Compute Devices.

07/2017 – 04/2018
Bangalore, IND

Co-Founder at Signify

Digital Impact Square, TCS Foundation and MIT Media Labs [📍](#)

Developing an avatar-ified web-based YouTube video-captioning system for sign-language. Brainstormed through several field visits and user journey mappings to arrive at the final product. The product translated available subtitles or auto-generated captions to 3D avatar gestured sign language captions using language rule sets, knowledge bases and 3D rendering techniques. Co-authored a paper publishing our findings, detailed specifications of the system, results obtained and conclusions made.

06/2016 – 12/2016
Nashik, IND

EDUCATION

PhD

Maastricht University

Enrolled in a 4-year PhD program at Maastricht university and posted as a research scholar at the AIM lab, Harvard Medical School and MGB

09/2021 – present
Maastricht, NL

Master of Science in Artificial Intelligence

Department of Data Science and Knowledge Engineering, Maastricht University

Graduated Cum Laude Honours, CGPA : 8.78

09/2019 – 07/2021
Maastricht, NL

Focused Electives on *Deep Learning, Computer Vision, Computational Statistics* and *Advanced Machine Learning*.

Bachelor of Technology in Electronics and Communications

Manipal Institute of Technology, Manipal University

CGPA: 8.43

06/2012 – 05/2016

Manipal, IND

SKILLS

Machine Learning/Deep Learning in Python

Pytorch, Tensorflow

Computational Statistics

R

Full Stack Development

Tensorflow.js, Vanilla JS, Flask, Tornado, Django

Deep Learning in Production

Tensorflow Lite, OpenCV, OpenVINO Toolkit, C++

Cloud Compute Services

AWS, GCP, Heroku, Digital Ocean

PUBLICATIONS

Frequency-Domain-Based Structure Losses for CycleGAN-Based Cone-Beam Computed Tomography Translation

01/2023

MDPI Sensors

First author, contributed to the conceptualization, implementation and validation of a frequency loss based additional constraint to the CycleGAN framework for medical imaging use-cases.

Head and neck tumor segmentation in PET/CT: The HECKTOR challenge

04/2022

Medical Image Analysis

Participated in the HECKTOR challenge and co-authored the final challenge paper

Radiomics integration into a picture archiving and communication system

09/2021

Physics and Imaging in Radiation Oncology

Second author, contributed to the technical development of the pipeline and ideation for tools to be used in the system

Artificial Intelligence in Radiation Therapy

08/2021

IEEE Transactions on Radiation and Plasma Medical Sciences

Co-authored the section on image translation and generative modelling applied to radiation therapy.

Oropharyngeal Tumour Segmentation using Ensemble 3D PET-CT Fusion

10/2020

Networks for the HECKTOR Challenge

HECKTOR 2020: Head and Neck Tumor Segmentation

Shared first author, worked on training, ideation and evaluation of different network implementations for the HECKTOR challenge

Automated 3D sign language caption generation for video

07/2019

Universal Access in the Information Society

Shared first author, main efforts focused on building the caption generation system along with integration of continuous feedback during development of the system