# Sarthak Pati

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## TECHNICAL SKILLS

| | | | |
|---|---|---|---|
| **Programming** | Python, C++, MATLAB | **Libraries** | PyTorch, ITK, VTK, OpenCV |
| **CI/CD** | GitHub Actions, Travis | **Cross-platform** | Docker, Singularity, Conda, Pip, CMake |

## LATEST WORK EXPERIENCE

***Software Architect*** **Indiana University** *September 2023 – present*

- Leading the design of the Generally Nuanced Deep Learning Framework (GaNDLF) to enhance healthcare AI accessibility for scientists, and to reduce time to production for research projects.
- Researching integration of multiple data streams for comprehensive healthcare AI using state-of-the-art DL technologies, including LLMs and transformers.
- Establishing and coordinating academic collaborations and industrial partnerships (e.g., MLCommons, Intel, NVidia, FlyWheel, SECTRA).
- Contributing to the thought process, design and development of multiple large-scale open-source projects focused on AI privacy and federated learning, such as OpenFL and MedPerf.

***Application Architect*** **University of Pennsylvania** *February 2023 – August 2023*

- Established application best practices (including design principles and CI/CD guidance) and collaborated with junior developers for implementations.
- Maintained active contributions to the design and development of OpenFL and MedPerf to actively push the boundaries of federated learning forward in terms of research applications.

***Sr. Application Developer*** **University of Pennsylvania** *December 2014 – February 2023*

- Lead the software development efforts at the Center for Biomedical Image Computation and Analytics.
- Spearheaded the development in the Federated Tumor Segmentation (FeTS) initiative, an NIH-funded grant, which applies federated learning to real-world applications.
- Acted as one of the lead developers of the Cancer Imaging Phenomics Toolkit (CaPTk) to develop a comprehensive imaging analytics suite of algorithms aiming to derive extensive panels of quantitative imaging features and integrate them into diagnostic and predictive models.
- Published regular seminars of novel libraries and software packaging techniques to lab members.

***Student Research Assistant*** **Technical University of Munich** *April 2012 – May 2014*

- Contributed to the development of an online camera calibration model based on Unscented Transform using a single fiducial marker to be used in a Cam-C framework.
- Contributed to a framework that enabled the tracking of flexible needles in robot-assisted ultrasound surgery using particle filter.
- Contributed to real-time tracking and mosaicking of surgical tools and the retina in Ophthalmoscopy datasets.

## NOTABLE PUBLICATIONS

1. **S. Pati**, et al.; *Privacy Preservation for Federated Learning in Healthcare*; Cell Patterns (2024).
2. **S. Pati**, et al.; *Generally Nuanced Deep Learning Framework for Scalable End-to-End Clinical Workflows*; Nature Comms Engg (2023).
3. **S. Pati**, et al.; *Federated Learning Enables Big Data for Rare Cancer Boundary Detection*; Nature Comms (2022).
4. P. Foley, et Int., **S. Pati**, et al.; *OpenFL: The Open Federated Learning library*; Phy in Med & Bio (2022).
5. **S. Pati**, et al.; *Federated Tumor Segmentation tool: an open-source solution to further solid tumor research*; Phy in Med & Bio (2022).
6. S. Thakur, **S. Pati**, et al.; Optimization of Deep Learning Based Brain Extraction in MRI for Low Resource Environments; MICCAI (2022).
7. O. Güley, **S. Pati**, S. Bakas; *Classification of Infection and Ischemia in Diabetic Foot Ulcers Using VGG Architectures.*; MICCAI (2021).
8. **S. Pati**, et al.; *Reproducibility analysis of multi-institutional paired expert annotations and radiomic features*; Medical Physics (2020).
9. **S. Pati**, et al.; *Glioblastoma Biophysical Growth Estimation Using Deep Learning-Based Regression*; Neuro-Oncology (2020).
10. **S. Pati**, et al.; *The Cancer Imaging Phenomics Toolkit (CaPTk): Technical Overview*; MICCAI (2019).
11. S. P. Thakur, J. Doshi, **S. Pati**, et al.; *Skull-Stripping of Glioblastoma MRI Scans Using 3D Deep Learning*; MICCAI (2019).

## EDUCATION

**Technical University of Munich**
Munich, Germany
*Ph.D., Computer Science*
2025 | Summa cum Laude

**Technical University of Munich**
Munich, Germany
*M.S., Biomedical Computing*
June 2014 | GPA: 1.9/1.0

**Manipal Academy of Higher Education**
Manipal, India
*B.E., Biomedical Engineering*
June 2010 | GPA: 7.4/10

## HONORS & AWARDS

- Dean's List (*top 25%*) for Doctorate Studies.
- Plenary presentation (*top 8* of all submitted abstracts) at Pendergrass Symposium 2023.
- Best poster award (*top 5%*) at NIH Annual Scientific Meeting of the NCI/ITCR funding program 2020 and 2022.
- Oral Presentation (*top 5%*) at Pendergrass Symposium 2021 and 2022.
- Magna cum Laude (*top 10%*) at Pendergrass Symposium 2021.
- *1st* in the Brain Tumor Segmentation challenge 2015.
- *2nd* in Histological Image registration challenge 2019.

## NOTABLE MEDIA MENTION

www.wsj.com/articles/intel-health-institutions-to-use-emerging-ai-technique-to-improve-tumor-detection-11589191200

## LIST OF ALL PUBLICATIONS

tinyurl.com/scholarpati

## INTERESTS

Graphic Design • Career Mentorship • Traveling • Photography