

SARTHAK PATI

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EDUCATION

Technical University of Munich	Munich, Germany
Ph.D., Computer Science, Summa cum laude	2025
Technical University of Munich	Munich, Germany
M.S., Biomedical Computing	2014
Manipal Academic of Higher Education	Manipal, India
B.E., Biomedical Engineering	2010

SUMMARY

Experienced researcher (h-index of **30** and **9000+** citations) and software architect with **11+** years experience designing cross-platform applications, leading complex system integrations, and driving R&D from concept to prototype. Expert in AI/ML product development with a focus on robust, scalable, and performant solutions.

TECHNICAL SKILLS

Python/C++	★★★★☆	Confidential Computing	★★★★☆	Foundational Models	★★★★☆
PyTorch/TensorFlow	★★★★☆	VTK/ITK/OpenCV	★★★★☆	LLM training	★★★☆☆
GitHub Actions	★★★★☆	Docker	★★★☆☆	Conda/Pip/Uv	★★★★☆

LATEST PROFESSIONAL EXPERIENCE

Vaiyu Solutions	Miami, FL
Owner and CEO	10/2023 - Present
<ul style="list-style-type: none">Providing specialized consulting related to AI operationalization and data monetization for 4+ clients.Managed an interdisciplinary team of 5 engineers and scientists to provide end-to-end solutions and engineering services for pharma, healthcare, finance, and energy clients of various sizes.	

Indiana University	Indianapolis, IN (Remote)
Software Architect	09/2023 - 09/2025
<ul style="list-style-type: none">Led the creation of “data as IP” and “model as IP” strategies to push R&D efforts into privacy and security applications, culminating in a USD 3.5 million grant from NIH/NCI for its research.Led the design and development of 8+ projects across inter-disciplinary domains such as healthcare AI, privacy, security, federated learning, optimization, and benchmarking.Designed a robust workflow-based solution used across various companies (GaNDLF) to reduce AI prototyping time by 30%, and enables AI deployment for multimodal data. This was adopted as a core MLCommons project in 2024.Integrated optimization routines for model inference which reduced resource requirements between 10-50% and reduced overall inference latency up to 70%.Created and pushed an organization-level strategy to adopt latest research faster by including native support of latest open-source libraries (such as transformers, lightning, mlflow) in HPC compute stack, reducing the amount of custom research environments and containers needed by up to 20%.Authored 20+ internal and external tutorials, seminars and talks for knowledge dissemination.Authored 10+ peer-reviewed publications in high impact journals showcasing cutting-edge research.	

University of Pennsylvania	Philadelphia, PA
Application Architect	02/2023 - 08/2023
<ul style="list-style-type: none">Led the R&D of a USD 1.2 million grant from NIH to deploy federated learning in real-world healthcare infrastructure.Streamlined 10+ legacy projects to improve maintainability and reducing the technical debt over time.	

University of Pennsylvania	Philadelphia, PA
Senior Application Developer	12/2018 - 06/2019
<ul style="list-style-type: none">Led the R&D of a USD 5 million grant from NIH/NCI to operationalize AI for effective use by clinicians.Led the software development efforts for a team of 5 developers and 25 researchersStreamlined development by introducing effective DevOps & MLOps practices for AI model development.Authored 20+ peer-reviewed publications in high impact conferences and journals.	

HONORS AND AWARDS

- Dean's list for doctoral dissertation (top **10%**) 2020-2024.
- Nature Communications Engineering **Editor's choice** 2023 for "Generally Nuanced Deep Learning Framework" [[ref](#)].
- Nature Communications Top **25** Health Sciences Articles 2022 for "Federated Learning in Healthcare" [[ref](#)].
- Plenary presentation (top **8**) at Pendergrass Symposium 2023 for "Comprehensive Federated Ecosystem (COFE)".
- Best poster award (top **5%**) at NIH Annual Scientific Meeting of the ITCR funding program 2020 and 2022.
- Oral Presentation (top **5%**) at Pendergrass Symposium 2022 for "AI-based Volumetric Breast Density Estimation with Digital Breast Tomosynthesis".
- Oral Presentation (top **5%**) at Pendergrass Symposium 2021 for "Federated Tumor Segmentation".
- Magna cum laude (top **10%**) at Pendergrass Symposium 2021 for "Generally Nuanced Deep Learning Framework".
- **2nd place** in the Automatic Non-Rigid Histological Image Registration Challenge 2019 [[ref](#)].
- **1st place** in the Brain Tumor Segmentation Challenge at MICCAI 2015.

MEDIA MENTIONS OF RESEARCH

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|---------------------------------------|---------------------------------|--------------------------------|
| ◦ Wall Street Journal | ◦ Eureka Alert | ◦ News Medical |
| ◦ IU News | ◦ Science Daily | |

INVITED TALKS ([FULL LIST](#))

- Tutorials (half and full day) on Federated Learning at multiple top-tier AI and clinical conferences:
 - Medical Image Computing and Computer Assisted Intervention (MICCAI)
 - Association for the Advancement of Artificial Intelligence (AAAI)
 - Radiological Society of North America (RSNA)
 - Society for Optics and Photonics (SPIE) Medical Imaging
- Presentation at MRI Together Conference.
- Presentation at University of Edinburgh.
- Multiple presentations at Georgetown University.
- Presentation and demonstration of applications of radiomics and federated learning applications healthcare at the Radiological Society of North America (RSNA) Annual Meet (2016-2021).
- Half Day Tutorial on Cancer Imaging at the IEEE International Symposium on Biomedical Imaging (ISBI) (2018).
- Presentation and demonstration of radiomics integration in healthcare (CaPTk) at the International Society for Optics and Photonics (SPIE) Medical Imaging Conferences (2017-2019).

SERVICE

- Serving as Vice Chair for Algorithmic Development at the [Medical Working Group of MLCommons](#) since 2023, a non-profit aiming to improve machine learning for the community.
- Academic reviewer for **10+** journals (IEEE TMI, Nature Communications) and conferences (NeurIPS, MICCAI, SPIE).
- Teaching concepts related scientific programming, production-level machine learning in academic conferences.
- Maintainer of **10+** open-source projects and **40+** conda recipes.
- Active open-source contributor to **50+** projects.

SELECTED PUBLICATIONS ([FULL LIST](#))

26. M. Zenk, U. Baid, **S. Pati**, et al. Towards fair decentralized benchmarking of healthcare AI algorithms with the Federated Tumor Segmentation (FeTS) challenge. (*Nature Communications*) 2025.
25. **S. Pati**, S. Wagner, et al. An Unsupervised Brain Extraction Quality Control Approach for Efficient Neuro-Oncology Studies. (*Journal of Imaging Informatics in Medicine*) 2025.
24. S. Thakur, **S. Pati**, et al. Optimization of Deep Learning Models for inference in low resource environments. (*IEEE Computers in Biology and Medicine*) 2025.
23. **S. Pati**, R. Turrise, et al. Adapting to evolving MRI data: A transfer learning approach for Alzheimer's disease prediction. (*NeuroImage*) 2025.

22. **S. Pati**, U. Baid, et al. Pan-Cancer Tumor Infiltrating Lymphocyte Detection based on Federated Learning. (*IEEE Conference on Big Data*) 2024.
21. **S. Pati**, et al. Privacy preservation for federated learning in health care. (*Cell Patterns*) 2024.
20. **S. Pati**, A. Karargyris, et al. Federated benchmarking of medical artificial intelligence with MedPerf. (*Nature Machine Intelligence*) 2023.
19. **S. Pati**, et al. GaNDLF: The Generally Nuanced Deep Learning Framework for Scalable End-to-End Clinical Workflows. (*Nature Communications Engineering*) 2023.
18. **S. Pati**, U. Baid, B. Edwards, et al. Federated Learning Enables Big Data for Rare Cancer Boundary Detection. (*Nature Communications*) 2022.
17. **S. Pati**, P. Foley, et al. OpenFL: The Open Federated Learning library. (*Physics in Medicine & Biology*) 2022.
16. **S. Pati**, et al. The Federated Tumor Segmentation (FeTS) tool: an open-source solution to further solid tumor research. (*Physics in Medicine & Biology*) 2022.
15. **S. Pati**, S. Bakas, et al. The University of Pennsylvania glioblastoma (UPenn-GBM) cohort: advanced MRI, clinical, genomics, & radiomics. (*Nature Scientific Data*) 2022.
14. R. Chitalia, **S. Pati**, et al. Expert tumor annotations and radiomics for locally advanced breast cancer in DCE-MRI for ACRIN 6657/I-SPY1. (*Nature Scientific Data*) 2022.
13. V. Ahluwalia, W. Mankowski, **S. Pati**, et al. Deep-learning-enabled volumetric breast density estimation with digital breast tomosynthesis. (*Cancer Research*) 2022.
12. **S. Pati**, V. Ahluwalia, et al. Artificial-intelligence-driven volumetric breast density estimation with digital breast tomosynthesis in a racially diverse screening cohort. (*J. of Clinical Oncology*) 2022.
11. U. Baid, **S. Pati**, et al. The Federated Tumor Segmentation (FeTS) Initiative: The First Real-World Large-Scale Data-Private Collaboration Focusing On Neuro-Oncology. (*Neuro-Oncology*) 2021.
10. O. Güley, **S. Pati**, S. Bakas. Classification of Infection and Ischemia in Diabetic Foot Ulcers Using VGG Architectures. (*Springer, Cham*) 2021.
9. **S. Pati**, L. Venet, et al. Accurate and Robust Alignment of Differently Stained Histologic Images Based on Greedy Diffeomorphic Registration. (*Applied Sciences*) 2021.
8. **S. Pati**, D. Bounias, et al. Interactive Machine Learning-Based Multi-Label Segmentation of Solid Tumors and Organs. (*Applied Sciences*) 2021.
7. **S. Pati**, S. Rathore, et al. Multi-institutional noninvasive in vivo characterization of IDH, 1p/19q, and EGFRvIII in glioma using neuro-Cancer Imaging Phenomics Toolkit (neuro-CaPTk). (*Neuro-oncology advances*) 2020.
6. **S. Pati**, et al. Reproducibility analysis of multi-institutional paired expert annotations and radiomic features of the Ivy Glioblastoma Atlas Project (Ivy GAP) dataset. (*Medical Physics*) 2020.
5. **S. Pati**, et al. Glioblastoma Biophysical Growth Estimation Using Deep Learning-Based Regression. (*Neuro-Oncology*) 2020.
4. **S. Pati**, S. P. Thakur, et al. Brain extraction on MRI scans in presence of diffuse glioma: Multi-institutional performance evaluation of deep learning methods and robust modality-agnostic training. (*NeuroImage*) 2020.
3. **S. Pati**, M. Sheller, et al. Federated learning in medicine: facilitating multi-institutional collaborations without sharing patient data. (*Scientific Reports*) 2020.
2. **S. Pati**, M. McNitt-Gray, et al. Standardization in quantitative imaging: a multicenter comparison of radiomic features from different software packages on digital reference objects and patient data sets. (*Tomography*) 2020.
1. **S. Pati**, C. Davatzikos, et al. Cancer imaging phenomics toolkit: quantitative imaging analytics for precision diagnostics and predictive modeling of clinical outcome. (*Journal of Medical Imaging*) 2018.