# Sarthak Pati

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## SUMMARY

Experienced researcher with strong understanding of data analysis, AI development, security, and software design. Utilizes innovative approaches to develop, optimize, and operationalize experimental AI methods in privacy-sensitive sectors such as healthcare.

## TECHNICAL SKILLS

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| **Programming** | Python, C++, MATLAB | **Libraries** | PyTorch, TensorFlow, 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* |
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- Led the design and development of multiple open-source projects focusing on healthcare AI, privacy, and federated learning to accelerate research and operationalize AI.
- Researched the integration of diverse data streams for cutting-edge healthcare AI applications, leveraging large language models and advanced transformer architectures.
- Managed collaborations across various stakeholders in academia, industry and non-profit.
- Mentored junior researchers and engineers to foster best practices in AI development and software architecture in daily practice.
- Optimized performance by identifying system inefficiencies and implementing enhancements.
- Communicated technical strategies to senior leadership and external stakeholders.
- Authored comprehensive documentation and research papers on cutting-edge AI research methodologies to facilitate knowledge sharing.

| *Application Architect* | **University of Pennsylvania** | *February 2020 – August 2023* |
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- 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.
- Reduced time-to-market for new features by effectively utilizing DevOps and MLOps practices in the software development lifecycle.
- Evaluated emerging technologies for potential adoption in future projects while staying ahead of academic and industrial research trends to maintain competitive and strategic advantage.
- Streamlined multiple codebases through regular refactoring efforts, improving maintainability and reducing the technical debt over time.

| *Sr. Application Developer* | **University of Pennsylvania** | *December 2014 – February 2020* |
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- Led 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.

## 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 and Bio (2022).
5. **S. Pati**, et al.; *Federated Tumor Segmentation tool: an open-source solution to further solid tumor research*; Phy in Med and 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. **S. Pati**, et al.; *Reproducibility analysis of multi-institutional paired expert annotations and radiomic features*; Medical Physics (2020).
8. **S. Pati**, et al.; *Glioblastoma Biophysical Growth Estimation Using Deep Learning-Based Regression*; Neuro-Oncology (2020).