Stanford

Shailja

Postdoctoral Scholar, Radiological Sciences Laboratory

Curriculum Vitae available Online

Bio

BIO

Shailja is an engineer and computational scientist interested in the modeling of the human brain to study neurological diseases and guide neurosurgeries. As a Wu Tsai Neuroscience Institute's postdoctoral fellow with Prof. Jennifer A. McNab and Prof. Josef Parvizi, she investigates tractography-based neurosurgical targeting. She is interested in mapping the whole brain structural connectivity network from diffusion MRI to functional connectivity in the human brain. Shailja received her PhD in Electrical and Computer Engineering from the University of California, Santa Barbara and BS from Electrical Engineering Department, Indian Institute of Technology, Kharagpur. Her doctoral research is on Reeb graphs for modeling white matter fibers in the human brain, which was awarded the Winifred and Louis Lancaster Best PhD Dissertation at UC Santa Barbara.

INSTITUTE AFFILIATIONS

- Member, Maternal & Child Health Research Institute (MCHRI)

HONORS AND AWARDS

- Interdisciplinary Postdoctoral Scholar Award, Wu Tsai Neuroscience Institute (2026)
- Winner of the Doctoral Consortium, International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI) (2025)
- Lancaster Best Dissertation Award, University of California, Santa Barbara (UCSB) (2024)
- Fiona and Michael Goodchild Graduate Mentoring Award, UCSB Graduate Division (2023)
- Summa Cum Laude Merit Award, International Society for Magnetic Resonance in Medicine (ISMRM), Cape Town, SA (2026)
- Best oral presentation at the ISMRM Diffusion Study Group, International Society for Magnetic Resonance in Medicine, Cape Town, SA (2026)
- Best poster at the WMSG business meeting, International Society for Magnetic Resonance in Medicine (ISMRM), Hawaii, USA (2025)
- NSF iREDEFINE Fellow, National Science Foundation, at the ECE Department Heads Association Annual Conference (2023)
- Certificate in College and University Teaching (CCUT), UCSB (2024)
- Pathways to Neurosciences Trainee, Wu Tsai Neurosciences Institute, Stanford (2024)
- Travel Awards, IPAM, MICCAI, ECEDHA iREDEFINE workshop, NeurIPS, and ASEE (2021-24)
- Undergraduate Academic Scholarship, Indian Institute of Technology (IIT), Kharagpur (2012)

BOARDS, ADVISORY COMMITTEES, PROFESSIONAL ORGANIZATIONS

- Advisory Member, MICCAI Student Board (2023 - 2024)
- Co-organizer, Computational Diffusion MRI (CDMRI) Workshop, MICCAI (2024 - present)

PROFESSIONAL EDUCATION

- PhD, University of California, Santa Barbara , Department of Electrical and Computer Engineering (2024)
- BTech, Indian Institute of Technology (IIT), Kharagpur , Department of Electrical Engineering (2016)

STANFORD ADVISORS

- Jennifer McNab, Postdoctoral Faculty Sponsor

Research & Scholarship

PROJECTS

- Diffusion tractography-based neurosurgical targeting methods - Stanford University (July 1, 2024)
- Robust diffusion scheme for clinical feasibility and reliability - Stanford University

LAB AFFILIATIONS

- Jennifer McNab, Radiological Sciences Laboratory (7/1/2024)

Publications

PUBLICATIONS

- **Artificial Intelligence for Automatic Analysis of Shunt Treatment in Presurgery and Postsurgery Computed Tomography Brain Scans of Patients With Idiopathic Normal Pressure Hydrocephalus.** *Neurosurgery*
  Shailja, S., Nguyen, C., Thanigaivelan, K., Gudavalli, C., Bhagavatula, V., Chen, J. W., Manjunath, B. S.
  2024
- **ReeBundle: A Method for Topological Modeling of White Matter Pathways Using Diffusion MRI.** *IEEE transactions on medical imaging*
  Shailja, S., Bhagavatula, V., Cieslak, M., Vettel, J. M., Grafton, S. T., Manjunath, B. S.
  2023; 42 (12): 3725-3737
- **Segmentation, tracking, and sub-cellular feature extraction in 3D time-lapse images.** *Scientific reports*
  Jiang, J., Khan, A., Shailja, S., Belteton, S. A., Goebel, M., Szymanski, D. B., Manjunath, B. S.
  2023; 13 (1): 3483
- **ReTrace: Topological Evaluation of White Matter Tractography Algorithms Using Reeb Graphs**
  Shailja, S., Chen, J. W., Grafton, S. T., Manjunath, B. S.
  edited by Mito, R., Powell, E., Rheault, F., Winzeck, S., Karaman, M.
  SPRINGER INTERNATIONAL PUBLISHING AG.2023: 177-191
- **Automatic classification and neurotransmitter prediction of synapses in electron microscopy.** *Biological imaging*
  Zhang, A., Shailja, S., Borba, C., Miao, Y., Goebel, M., Ruschel, R., Ryan, K., Smith, W., Manjunath, B. S.
  2022; 2: e6
- **SEMI SUPERVISED SEGMENTATION AND GRAPH-BASED TRACKING OF 3D NUCLEI IN TIME-LAPSE MICROSCOPY**
  Shailja, S., Jiang, J., Manjunath, B. S., IEEE
  IEEE.2021: 385-389
- **A Computational Geometry Approach for Modeling Neuronal Fiber Pathways**
  Shailja, S., Zhang, A., Manjunath, B. S.
  edited by DeBruijne, M., Cattin, P. C., Cotin, S., Padoy, N., Speidel, S., Zheng, Y., Essert, C.
  SPRINGER INTERNATIONAL PUBLISHING AG.2021: 175-185
- **Improving Patch-Based Convolutional Neural Networks for MRI Brain Tumor Segmentation by Leveraging Location Information.** *Frontiers in neuroscience*
  Kao, P. Y., Shailja, S., Jiang, J., Zhang, A., Khan, A., Chen, J. W., Manjunath, B. S.
  2019; 13: 1449