

Phaneendra Kumar Yalavarthy

Department of Computational and Data Sciences (CDS)
Division of Interdisciplinary Sciences
Indian Institute of Science (IISc), Bangalore - 560 012 KA, India.
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RESEARCH INTERESTS Artificial Intelligence for Medical Imaging, Computational methods in Medical Imaging, Perfusion imaging, Medical Image Processing (reconstruction/analysis), Inverse problems in Imaging, Imaging in Digital Rock, and Cyber-Physical Systems.

EDUCATION
Ph.D., Thayer School of Engineering, June 2004 – Sep 2007
A generalized least-squares minimization method for near infrared diffuse optical tomography
Advisor: Prof. B. W. Pogue.
Dartmouth College, Hanover, NH, USA.

M.Sc.(Engineering), Department of Instrumentation, Aug 2001 – Jan 2004
Diffuse optical tomographic reconstruction in low-scattering tissue: development of inversion algorithms based on Monte-Carlo simulation
Advisors: Prof. R. M. Vasu and Prof. P. C. Mathias
Indian Institute of Science, Bangalore, India.

M.Sc.(Physics), Department of Physics, June 1999 – March 2001
Precision measurements of energies and intensities of gamma transitions in the electron capture decay of ⁷⁵Se using large volume HPGe-detector
Advisor: Dr. M. Sainath
Sri Sathya Sai University, Prasanthi Nilayam, India.

B.Sc., Honors in Physics, June 1996 – March 1999
Sri Sathya Sai University, Prasanthi Nilayam, India.

POSITIONS
Chief Project Manager
TANUH **AI-CoE in Healthcare, IISc Bangalore, India**
July 2025 –
Establishing a not for profit Sec. 8 company for the AI-Centre of Excellence in Healthcare, funded by Ministry of Education, Govt. of India (<https://www.tanuh.ai/>)

Professor
Department of Computational & Data Sciences **Indian Institute of Science Bangalore, India**
Dec 2020 –
Convener, Medical Imaging Group (MIG)

Consulting Principal
Edison AI Advanced Technology Group (ATG) **GE HealthCare Bangalore, India**
July 2023 – June 2024
Development of Advanced X-ray Computed Tomography Reconstruction Algorithms (on sabbatical leave from IISc).

Chair
Office of Development & Alumni Affairs **Indian Institute of Science Bangalore, India**
Aug 2020 – June 2023
Leading the fund raising from non-governmental and other philanthropic sources, global engagement of alumni and maintaining relations for/with IISc.

*Chair
Office of International Relations*

**Indian Institute of Science
Bangalore, India**
Nov 2018 – Feb 2021

Chair of international relations, promoting global cooperation in research and education across various leading universities, and recruiting international students.

*Associate Professor
Department of Computational & Data Sciences*
Convener, Medical Imaging Group (MIG)

**Indian Institute of Science
Bangalore, India**
Dec 2014 – Nov 2020

*IISc Coordinator
Prime Ministers Research Fellowship (PMRF)
scheme*

**Indian Institute of Science
Bangalore, India**
Mar 2018 – Aug 2020

Coordinating Prime Ministers Research Fellowship (PMRF) selections, admissions, reviewing and monitoring the implementation of the scheme.

*Chair
Department of Computational & Data Sciences*

**Indian Institute of Science
Bangalore, India**
Jan 2016 – Feb 2018

Department Chair for the newly established interdisciplinary engineering department of computational and data sciences (CDS).

*Consulting Principal
Helath & Medical Equipment (HME)*

**Samsung R&D Institute
Bangalore, India**
Jan 2015 – Dec 2015

Mobile Health Applications, Post-Processing algorithms development for Magnetic Resonance Imaging (on sabbatical leave from IISc).

*Assistant Professor (Tenured from May, 2013)
Supercomputer Education and Research Centre*
Convenor, Medical Imaging Group (MIG)

**Indian Institute of Science
Bangalore, India**
Dec 2008 – Nov 2014

*Visiting Teaching Professor
Department of Physics*

**Sri Sathya Sai University
Puttaparthi, India**
June & July 2014

Medical Image processing, Nuclear Medicine Imaging, and Digital Image Processing.

*Visiting Assistant Professor
Thayer School of Engineering*

**Dartmouth College
Hanover, NH**
June & July 2010

Multi-modal optical imaging, Image guided diffuse optical tomography, and Optical image reconstruction with spatial priors.

*Post-doctoral research associate
Department of Radiation Oncology*

**Washington University School of
Medicine, St. Louis, MO**
Oct 2007 – Nov 2008

Four-dimensional computed tomography, four-dimensional positron emission tomography, lung motion modeling, and computational methods in radiation therapy.

*US DoD Breast Cancer Predoctoral Fellow
Thayer School of Engineering*

**Dartmouth College
Hanover, NH**
Feb 2006 – Sep 2007

Three-dimensional near infrared imaging of pathophysiological changes within the breast: Optimizing and developing three-dimensional near infrared image reconstruction techniques.

Teaching Assistant
Thayer School of Engineering

Dartmouth College
Hanover, NH
Fall 2006

ENGS 91: Numerical Methods in Computation.

Teaching Assistant
Thayer School of Engineering

Dartmouth College
Hanover, NH
Winter 2006

ENGS 105: Computational Methods for Partial Differential Equations I.

Graduate Research Assistant
Thayer School of Engineering

Dartmouth College
Hanover, NH
June 2004 – Jan 2006

Critical computational aspects in diffuse optical tomographic imaging of breast.

Graduate Research Assistant
Department of Instrumentation

Indian Institute of Science
Bangalore, India
Aug 2001 – Jan 2004

Diffuse optical tomographic imaging of low-scattering tissue.

TEACHING

- DS 260: Medical Imaging (January-April, 2025).
- DS 261o: Artificial Intelligence for Medical Image Analysis (Online: January-April, 2025).
- DS 288: Numerical Methods (August-December, 2024).
- Executive program on Artificial Intelligence in Healthcare (August 2024 - December 2024).
- Executive program on Artificial Intelligence for Digital Health and Imaging (November 2022 - June 2023).
- DS 261o: Artificial Intelligence for Medical Image Analysis (Online: January-April, 2023).
- DS 261: Artificial Intelligence for Medical Image Analysis (August-December, 2022).
- Executive program on Digital Health and Imaging (January-October, 2022).
- DS 260: Medical Imaging (January-April, 2022).
- DS 288: Numerical Methods (August-December, 2021).
- DS 294: Data Analysis and Visualization (March-June, 2021).
- Executive program on Digital Health and Imaging (February-July, 2021).
- DS 200: Research Methods (October 2020-January 2021).
- Executive program on Digital Health and Imaging (August 2020-January 2021).
- DS 260: Medical Imaging (January-June, 2020).
- DS 288: Numerical Methods (August-December, 2019).
- UE 201: Introduction to Scientific Computing (August-December, 2019).
- DS 200: Research Methods (August-December, 2019).
- DS 294: Data Analysis and Visualization (January-April, 2019).
- DS 260: Medical Imaging (January-April, 2019).
- DS 211: Numerical Optimization (August-December, 2018).
- DS 200: Research Methods (January-April, 2018).
- DS 260: Medical Imaging (January-April, 2018).
- DS 294: Data Analysis and Visualization (January-April, 2017).
- DS 260: Medical Imaging (January-April, 2017).
- DS 288: Numerical Methods (August-December, 2016).
- UE 201: Introduction to Scientific Computing (January-April, 2016).

- SE 284: Numerical Linear Algebra (August-December, 2014).
- SE 288: Numerical Methods (August-December, 2014).
- MTOS 105*: Digital Image Processing (June-July, 2014).
- MTNM 103*: Nuclear Medicine and Allied Instrumentation (June-July, 2014)
*at Sri Sathya Sai University, Puttaparthi.
- SE 360: Topics in Medical Imaging (January-April, 2014).
- SE 360: Topics in Medical Imaging (January-April, 2013).
- SE 284: Numerical Linear Algebra (August-December, 2012).
- SE 260: Medical Imaging (January-April, 2012).
- SE 288: Numerical Methods (August-December, 2011).
- SE 260: Medical Imaging (January-April, 2011).
- SE 284: Numerical Linear Algebra (August-December, 2010).
- SE 260: Medical Imaging (August-December, 2009).
- SE 289: Numerical Solutions of Differential Equations (January-April, 2009).

HONORS/AWARDS

- Member, Technical Program Committee, Biomedical Health Sciences, Anusandhan National Research Foundation (ANRF), Department of Science and Technology (DST), Govt. of India (2025 -)
- Indian Institute of Technology, Tirupati - External Senate Member (educationists of repute) (2024 -)
- Member, Technical Expert Committee, ASEAN-India Science and Technology Development Fund (AISTDF), Department of Science and Technology (DST), Govt. of India (2024 -)
- Member, Selection Committee, Thomas F. Deutsch Fellowship in Biomedical Optics, Harvard Medical School, USA (2022 -)
- Member, Expert Committee, Wellcome Discovery Awards, Wellcome Trust, UK (2020 -)
- Member, Technical Expert Committee (TEC) on Biomedical Engineering and Stem Cells, Department of Biotechnology (DBT), Govt. of India (2022 -)
- S. Ramachandran National Bioscience Award for the year 2020, Department of Biotechnology (Government of India).
- Associate Editor, IEEE Transactions on Medical Imaging (2017 -)
- Member, Area Review Panel (ARP) for Diagnostics, COVID-19 Research Consortium, Department of Biotechnology (DBT) and Biotechnology Industry Research Assistance Council (BIRAC), Govt. of India (2020 -)
- Member, Technical Evaluation Committee (TEC), Biotechnology Ignition Grant (BIG), Biotechnology Industry Research Assistance Council (BIRAC), Govt. of India (2020 -)
- Expert Member, Bovine Semen Sorting Technology (Animal Biotechnology) Panel, Department of Biotechnology (DBT), Govt. of India (2020 - 2021)
- Member, Technical Expert Committee (Review committee) on Biomedical Engineering and Biodesign: Medical Devices, Diagnostics and implants, Department of Biotechnology (DBT), Govt. of India (2018 - 2022)
- Member, Task force of Bioengineering (Strategy committee), Department of Biotechnology (DBT), Govt. of India (2017 - 2020)
- The National Academy of Sciences India (NASI) Young Scientist Award (2014).
- Department of Biotechnology (Government of India) Innovative Young Biotechnologist Award (2013).
- Indian National Academy of Engineering (INAE) Young Engineer Award (2013).

- Recipient of Department of Biotechnology (Government of India) - Rapid Grant for Young Investigators (2013).
- Co-author of the work chosen for Summa Cum Laude Merit Award in the Twentieth Annual International Society for Magnetic Resonance in Medicine (ISMRM) meeting (2012) [Top 10 posters of ISMRM Meeting-2012].
- Department of Atomic Energy (Government of India) Young Scientist Research Award (2010).
- United Kingdom Royal Academy of Engineering (RAE) research exchange award (2010).
- Apple Laureate Award (2009).
- US Department of Defense breast cancer predoctoral fellowship award (2006-2008).
- SPIE student travel award to attend National Institutes of Health (NIH) Optical imaging workshop (2006).
- Outstanding teaching assistant awards (for both ENGS 91 & ENGS 105), Thayer School of Engineering, Dartmouth College (Winter 2006 & Fall 2006).
- International Centre for Theoretical Physics (ICTP) travel award to attend winter college on bio-photonics (2003).
- Recipient of fellowship including contingency funds from the Ministry of Human Resources and Development (MHRD), Government of India, throughout M.Sc.(Engineering) program at Indian Institute of Science, Bangalore, India (2001-2004).
- Received fellowship for both B.Sc. and M.Sc. (Physics) programs at Sri Sathya Sai Institute of Higher Learning (1996-2001).
- Honors in Physics (major) in B.Sc. (1999).

POST-DOCS

ADVISING

1. Dr. Raji S. Mathew, C. V. Raman Postdoctoral Fellow (2021 - 2023)

Current Position: Assistant Professor, Indian Institute of Science Education and Research (IISER), Thiruvananthapuram.

2. Dr. Vaishnavi Ravi, (June 2024 -)

3. Dr. Shreya Srivastava (May 2025 -)

4. Dr. Saurabh Sharma (June 2025 -)

STUDENTS

ADVISING

Ph.D. Students

1. Ravi Prasad K. J. (Aug 2009 - Mar 2013)

Thesis Title: Development of efficient computational methods for better estimation of optical properties in diffuse optical tomography.

Current Position: Associate Professor, National Institute of Technology, Goa.

2. Jaya Prakash (Nov 2012 - Apr 2014)

Thesis Title: Development of next generation image reconstruction algorithms for diffuse optical and photoacoustic tomography.

Microsoft Research India Ph.D. Fellowship Awardee; SPIE Optics and Photonics Education Scholarship Awardee for the year 2013; Sir Vithal N Chandavarkar Memorial Medal for best Ph.D. thesis-2016.

Current Position: Assistant Professor, Instrumentation and Applied Physics, Indian Institute of Science (IISc), Bangalore.

3. B. Calvin Shaw (Oct 2012 - Sep 2014)

Thesis Title: Development of Sparse Recovery based Optimized Diffuse Optical and Photoacoustic Image Reconstruction Methods.

SPIE Optics and Photonics Education Scholarship Awardee for the year 2014; Awarded Best Ph.D. thesis Citation by the Department 2016; Awarded Best M.Sc. (Engg.) thesis Citation by the Department - 2013.

Current Position: Acoustics Transducer Lead (AR/VR/Portal), Reality Labs, Meta (Facebook), California, USA.

4. Manish Bhatt (Aug 2013 - Aug 2016)

Thesis Title: Toward computationally efficient models for near-infrared and photoacoustic tomographic imaging.
 Current Position: Assistant Professor, Electrical Engineering, IIT-Guwahati.

5. Yamuna N. Swamy (Jan 2010 - Dec 2016)
 Thesis Title: Studies on Kernel Based Edge Detection and Hyper Parameter Selection in Image Restoration and Diffuse Optical Image Reconstruction.
 Current Position: Post-doctoral Research Fellow, ICTS-TIFR, Bangalore.

6. Sreedevi Gutta (Jan 2015 - Jan 2018)
 Thesis Title: Improving photoacoustic imaging with model compensating and deep learning methods.
TCS Ph.D. Fellowship Awardee; Awarded Best Ph.D. thesis Citation by the Department 2018.
 Current Position: Assistant Professor, Computer Science, California State University, USA.

7. Navchetan Awasthi (Aug 2016 - Dec 2018)
 Thesis Title: Vector Extrapolation and Guided Filtering Methods for Improving Photoacoustic and Microscopic Images.
Sir Vithal N. Chandavarkar Memorial Medal for best Ph.D. thesis - 2020.
 Current Position: Assistant Professor, University of Amsterdam, Netherlands.

8. Aditya Rastogi (Aug 2018 - Feb 2022)
 Thesis Title: Development of Novel Deep Learning Methods for Fast-MRI: Anatomical Image Reconstruction to Quantitative Imaging.
 Current Position: Post-doctoral Research Fellow, Universittsklinikum Heidelberg (UKHD), Germany.

9. P. Naveen (Aug 2019 - June 2023)
 Thesis Title: Development of Novel Deep Learning Models with Improved Generalizability for Medical Image Analysis.
Sir Vithal N. Chandavarkar Memorial Medal for best Ph.D. thesis - 2025.
 Current Position: Senior AI Scientist, GE Healthcare, Bangalore.

10. Hariharan Ravishankar (Oct 2020 - June 2025)
 Thesis Title: Unsupervised test-time adaptation for patient-specific deep learning models in medical imaging.
 Current Position: Chief AI Scientist, Intangles Lab Pvt Ltd, Bangalore.

11. Venkatesh Vaddadi (Jan 2020 - Jan 2025): Thesis Submitted
 Thesis Title: Development of novel deep learning models for quantitative medical image analysis.

12. Sejal Maisheri (Aug 2024 -)
 13. Rohit Pardasani (Aug 2024 -)
 14. Saisree Nathala (Aug 2024 -)
 15. Lakshmi Priyaa C A (Aug 2025 -)

Master Students

1. A. Kalyan Ram, M.Sc. (Engg.) Student (Aug 2011 - May 2013)
2. Jaya Prakash, M.Sc. (Engg.) Student (Aug 2011 - Oct 2012)
3. B. Calvin Shaw, M.Sc. (Engg.) Student (Aug 2011 - Sep 2012)
4. Tanmoy Mahajan, M.Tech Student (Aug 2014- Jun 2016)
5. Navchetan Awasthi, M.Tech Student (Aug 2014- Jun 2016)
6. Dween R. Sanny, M.Tech. (Research) Student (Aug 2016 - Aug 2018)
7. Sumit Sharma, M.Tech. Student (Aug 2016 - Jun 2018)
8. Biplab Kumar Pradhan, M.Tech. Student (Aug 2016 - Jun 2018)
9. Rohit Pardasani, M.Tech. Student (Aug 2017 - Jun 2019)
10. Megha Goel, M.Tech. Student (Aug 2017 - Jun 2019)
11. Ocima Kamboj, M.Tech. Student (Aug 2018 - Jul 2020)
11. Somil Jain, M.Tech. Student (Aug 2018 - Jul 2020)
12. Gaurav Oberoi, M.Tech. Student (Aug 2018 - Jul 2020)
13. Arindam Dutta, M.Tech. (Research) Student (Aug 2019 - Aug 2021)
14. Utkarsh Gupta, M.Tech. (Research) Student (Aug 2019 - July 2021)
[Subramanian Rajalakshmi Medal for best M.Tech. (Research) thesis - 2022]
15. Rahul John Roy, M.Tech. Student (Aug 2019 - July 2021)

16. Karan Harkishan Jeswani, M.Tech. Student (Aug 2019 - July 2021)
17. Avishek Shaw, M.Tech. Student (Aug 2019 - July 2021)
18. Rahul Wankhede, M.Tech. (Research) Student (Aug 2019 - April 2022)
19. Rahul Dev, M.Tech. Student (Oct 2020 - June 2022)
20. Karan R. Gujarati, M.Tech. Student (Aug 2021 - June 2023)
21. Arijit K. Mishra, M.Tech. Student (Aug 2021 - June 2023)
22. Varun Kaushik, M.Tech. Student (Aug 2021 - June 2023)
23. Bojja Sai Kiran, M.Tech. Student (Aug 2023 - June 2025)
24. Gone Shiva Chandhra, M.Tech. Student (Aug 2023 - June 2025)
25. Sudhanshu Pandey, M.Tech. Student (Aug 2023 - June 2025)
26. Nidhi Sharma, M.Tech. Student (Aug 2024 -)
27. Bhavana Mittapalli, M.Tech. Student (Aug 2024 -)
28. Deekasha Chutani, M.Tech. Student (Aug 2024 -)

PATENTS

1. *Devices and methods for combined optical and magnetic resonance imaging* (United States Patent No: 8886284B2); Inventors: Pogue, B. W. and Carpenter, C. M. and Davis, S. C. and Paulsen, K. D. and **Yalavarthy, P. K.** and Dehghani, H.
2. *Methods for perfusion quantification based on oscillatory limited QR deconvolution and analytical spectral filtering* (Indian Patent No: 403270); Inventors: **Yalavarthy, P. K.** and Reddy, K. V. and Lee, J.
3. *Method and system for stereo-visual localization of object* (United States Patent No: 11647949B2); Inventors: Venkatesan, S. M., **Yalavarthy, P. K.** and Annamalai, T.
4. *Visual protocol for needle Insertion for aiding in intravenous procedures with a mobile stereo camera* (Indian Patent Application No: 201741020003); Inventors: Venkatesan, S. M. and **Yalavarthy, P. K.**

JOURNAL PUBLICATIONS

85. V. Vadaddi, R. S. Mathew, and **P. K. Yalavarthy**, “ISDU-QSMNet: Iteration Specific Denoising with Unshared Weights for Improved QSM Reconstruction,” *NMR in Biomedicine* 2025 (in press).
84. J. Jeffery, A. RajKumar, S. Pandey, L. Bathala, and **P. K. Yalavarthy**, “Inference time correction based on confidence and uncertainty for improved deep-learning model performance and explainability in medical image classification,” *Computerized Medical Imaging and Graphics* (Special issue on Trustworthy Artificial Intelligence for Medical Imaging) **125**, 102630 (2025).
83. A. K. Ipadeola, M. H. Sliem, D. Abdeen, N. Laycock, A. RajKumar, **P. K. Yalavarthy**, and A. M. Abdullah, “Integrated Electrochemical and Machine Learning Framework for $\text{SiO}_2/\text{CaCO}_3$ Under-deposits Driven Welded X65 Carbon Steel Corrosion Mitigation in Sour Service Conditions,” *Petroleum Research* 2025 (in press).
82. A. K. Ipadeola, M. H. Sliem, D. Abdeen, N. Laycock, A. RajKumar, **P. K. Yalavarthy**, and A. M. Abdullah, “Unmasking the Hidden Threat: Conductive Under-Deposits and Their Role in Preferential Weldment Corrosion of Carbon Steel under Sour Conditions,” *Langmuir* **41**(35), 23632-23651 (2025).
81. E. M. Fayyad, A. K. Ipadeola, M. H. Sliem, D. Abdeen, N. Al-Qahtani, A. RajKumar, J. Jeffrey, **P. K. Yalavarthy**, and A. M. Abdullah, “Interfacial robustness of commercial amine-based inhibitors mitigates under-deposit corrosion of carbon steel in simulated sour conditions: A merged electrochemical and machine learning study,” *Emergent Materials* 2025 (in press).
80. A. RajKumar, N. Paluru, R. S. Mathew, P. Shenai, D. Abdeen, N. Laycock, and **P. K. Yalavarthy**, “Unsupervised Machine Learning for Automated Corrosion Staging Using Optical Microscopy Images,” *npj Materials Degradation* **9**, 83 (2025).

79. H. Ravishankar, N. Paluru, P. Sudhakar, and **P. K. Yalavarthy**, “Information Geometric Approaches for Patient-Specific Test-Time Adaptation of Deep Learning Models for Semantic Segmentation,” *IEEE Transactions on Medical Imaging* **44**(6), 2553–2567 (2025).

78. N. Paluru, R. S. Mathew, and **P. K. Yalavarthy**, “DF-QSM: Data Fidelity based Hybrid Approach for Improved Quantitative Susceptibility Mapping of the Brain,” *NMR in Biomedicine* **37**(9), e5163 (2024).

77. V. Venkatesh, R. S. Mathew, and **P. K. Yalavarthy**, “SpiNet-QSM: Model-based Deep Learning with Schatten pnorm Regularization for Improved Quantitative Susceptibility Mapping,” *Magnetic Resonance Materials in Physics, Biology and Medicine* (Special Issue on The role of artificial intelligence in MRI/MRS acquisition and reconstruction) **37**(3), 411–427 (2024).

76. A. Rastogi and **P. K. Yalavarthy**, “Greybox: A hybrid algorithm for direct estimation of tracer kinetic parameters from undersampled DCE-MRI data,” *Medical Physics* **51**(7), 4838–4858 (2024).

75. U. Gupta, V. Periyasamy, R. Hofmann, J. Prakash, and **P. K. Yalavarthy**, “Two-step morphology-based denoising and non local means smoothing improves micro-CT digital rock images,” *Geophysical Prospecting* (Special Issue on Rock Physics Contribution to the Energy Transition Challenge) **72**(5), 2049–2063 (2024).

74. C. Sindhura, M. Al Fahim, **P. K. Yalavarthy**, and S. Gorthi, “Fully Automated Sinogram-based Deep Learning Model for Detection and Classification of Intracranial Hemorrhage,” *Medical Physics* **51**(3), 1944–1956 (2024).

73. K. R. Gujarati, L. Bathala, V. Venkatesh, R. S. Mathew, and **P. K. Yalavarthy**, “Transformer-based Automated Segmentation of the Median Nerve in Ultrasound Videos of Wrist-to-Elbow Region,” *IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control* **71**(1), 56–69 (2024).

72. R. S. Mathew, N. Paluru, and **P. K. Yalavarthy**, “Model-Resolution based Deconvolution for Improved Quantitative Susceptibility Mapping,” *NMR in Biomedicine* **37**(2), e5055 (2024).

71. A. Rastogi, A. Dutta, and **P. K. Yalavarthy**, “VTDCE-Net: A Time Invariant Deep Neural Network for Direct Estimation of Pharmacokinetic Parameters from Undersampled DCE MRI Data,” *Medical Physics* **50**(3), 1560–1572 (2023).

70. N. Paluru, H. Ravishankar, S. Hegde, and **P. K. Yalavarthy**, “Self Distillation for Improving the Generalizability of Retinal Disease Diagnosis using Optical Coherence Tomography Images,” *IEEE Journal of Selected Topics in Quantum Electronics* (Issue on biophotonics) **29**(4), 7200812 (2023).

69. U. Gupta, V. R. Ahuja, S. R. Rapole, N. Saxena, R. Hofmann, R. J. Day-Stirrat, J. Prakash, and **P. K. Yalavarthy**, “Siamese-SR: A Siamese Super-Resolution model for boosting resolution of Digital Rock images for improved petrophysical property estimation,” *IEEE Transactions on Image Processing* **31**, 3479–3493 (2022).

68. N. Awasthi, A. Dayal, L. R. Cenkeramaddi, and **P. K. Yalavarthy**, “Mini-COVIDNet: Efficient Light Weight Deep Neural Network for Ultrasound based Point-of-Care Detection of COVID-19,” *IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control* (Coverpage article) **68**(6), 2023–2037 (2021).

67. J. Prakash, U. Agarwal, and **P. K. Yalavarthy**, “Multi GPU parallelization of maximum likelihood expectation maximization method for digital rock tomography data,” *Scientific Reports* **11**, 18356 (2021).

66. D. S. Breland, A. Dayal, A. Jha, **P. K. Yalavarthy**, O. J. Pandey, and L. R. Cenkeramaddi, “Robust Hand Gestures Recognition using a Deep CNN and Thermal Images,” *IEEE Sensors Journal* **21**(23), 26602-26614 (2021).

65. J. Prakash, S. K. Kalva, M. Pramanik, and **P. K. Yalavarthy**, “Binary Photoacoustic Tomography for Improved Vasculature Imaging,” *Journal of Biomedical Optics* **26**(8), 086004 (2021).

64*. S. Gupta, P. K. Rai, A. Kumar, **P. K. Yalavarthy**, and L. R. Cenkeramaddi, “Target Classification by mmWave FMCW Radars using Machine Learning on Range-Angle Images,” *IEEE Sensors Journal* **21**(18), 19993-20001 (2021).

63. P. K. Rai, H. Idse, R. R. Yakkati, A. Kumar, M. Z. A. Khan, **P. K. Yalavarthy**, and L. R. Cenkeramaddi, “Localization and Activity Classification of Unmanned Aerial Vehicle using mmWave FMCW Radars,” *IEEE Sensors Journal* **21**(14), 16043-16053 (2021).

62. A. Rastogi and **P. K. Yalavarthy**, “SpiNet: A Deep Neural Network for Schatten p-norm Regularized Medical Image Reconstruction,” *Medical Physics* **8**(5), 2214–2229 (2021).

61. D. S. Breland, S. B. Skriubakken, A. Dayal, A. Jha, **P. K. Yalavarthy**, and L. R. Cenkeramaddi, “Deep Learning based Sign Language Digits Recognition from Thermal Images with Edge Computing System,” *IEEE Sensors Journal* **21**(9), 10445–10453 (2021).

60. N. Paluru, H. B. Jenssen, T. Sakinis, L. R. Cenkeramaddi, J. Prakash, and **P. K. Yalavarthy**, “Anam-Net: Anamorphic Depth Embedding based Light-Weight CNN for Segmentation of Anomalies in COVID-19 Chest CT Images,” *IEEE Transactions on Neural Networks and Learning Systems (Fast Track: COVID-19 Focused Papers)* **32**(3), 932–946 (2021).

59. N. Awasthi, S. K. Kalva, M. Pramanik, and **P. K. Yalavarthy**, “Dimensionality Reduced Plug and Play Priors for Improving Photoacoustic Tomographic Imaging with Limited Noisy Data,” *Biomedical Optics Express (Feature issue of Translational Photoacoustic Imaging for Disease Diagnosis, Monitoring, and Surgical Guidance)* **12**(3), 1320–1338 (2021).

58. A. Dayal, N. Paluru, L. R. Cenkeramaddi, J. Soumya, and **P. K. Yalavarthy**, “Design and Implementation of Deep Learning Based Contactless Authentication System Using Hand Gestures” *Electronics (Artificial Intelligence Circuits and Systems (AICAS) Section)* **10**(2), 182 (2021).

57. **P. K. Yalavarthy**, S. K. Kalva, M. Pramanik, and J. Prakash, “Non-local means improves total-variation constrained photoacoustic image reconstruction,” *Journal of Biophotonics* **14**(1), e202000191 (2021).

56. N. A. Kande, R. Dakshane, A. Dukkipati, and **P. K. Yalavarthy**, “SiameseGAN: A Generative Model for Denoising of Spectral Domain Optical Coherence Tomography Images,” *IEEE Transactions on Medical Imaging* **40**(1), 180–192 (2021).

55. N. Awasthi, G. Jain, S. K. Kalva, M. Pramanik, and **P. K. Yalavarthy**, “Deep Neural Network Based Sinogram Super-resolution and Bandwidth Enhancement for Limited-data Photoacoustic Tomography,” *IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control (Special issue on Deep learning in medical ultrasound)* **67**(12), 2660–2673 (2020).

54. N. Awasthi, P. Katare, S. S. Gorthi, and **P. K. Yalavarthy**, “Guided filter based image enhancement for focal error compensation in low cost automated histopathology microscopic system,” *Journal of Biophotonics* **13**(11), e202000123 (2020).

53. A. Rastogi and **P. K. Yalavarthy**, “Comparison of iterative parametric and indirect deep learning-based reconstruction methods in highly undersampled DCE-MR Imaging of breast,”

Medical Physics **47**(10), 4838–4861 (2020).

52. A. Kaushik, **P. K. Yalavarthy**, and R. K. Saha, “Convergent Born series improves accuracy of numerical solution of time independent photoacoustic wave equation,” Journal of Modern Optics **267**(9), 849–855 (2020).
51. D. R. Sanny, J. Prakash, S. K. Kalva, M. Pramanik, and **P. K. Yalavarthy**, “Fractional Regularization to Improve Photoacoustic Tomographic Image Reconstruction,” IEEE Transactions on Medical Imaging **38**(8), 1935–1947 (2019).
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PROFESSIONAL
ACTIVITIES

- Senior Member, Optical Society of America (OSA) and Society of Photo-Optical Instrumentation Engineers (SPIE), 2019 -
- Member (2021 - 2022), Office of International Relations, Indian Institute of Science, Bangalore.
- Member (2020 -), Board of Studies (BoS), Department of Applied Mathematics, Defence Institute of Advanced Technology (DIAT), Pune.
- Member (2019 -), Rankings and Performance Committee, Indian Institute of Science, Bangalore.
- Chair (2018 - 2020), M.Tech. admissions committee, Indian Institute of Science, Bangalore.
- Department Curriculum Committee (DCC) Member (2018 -), Interdisciplinary Program on Mathematical Sciences (IMI), Indian Institute of Science, Bangalore.
- Senior Member, IEEE, 2017 -

- Central Admission Committee Member (2016 -), External Registration Programme (ERP), Indian Institute of Science, Bangalore.
- Member (2016 -), Board of Studies (BoS), Department of Mathematics and Computer Science, Sri Sathya Sai Institute of Higher Learning (SSIHL), Puttaparthi.
- Chair, The Fifth Electrical Sciences Symposium, Indian Institute of Science, Bangalore, February 20-21, 2014.
- Associate Editor, Medical Physics (Science journal of the American Association of Physicists in Medicine), 2012 - 2016.
- Faculty Associate (2009-), Indian Institute of Science Mathematics Initiative (IMI).
- Department Curriculum Committee (DCC) Member (2009-2012), Supercomputer Education and Research Centre, Indian Institute of Science, Bangalore.
- Coordinator (2008), Imaging interest journal club, Department of Radiation Oncology, Washington University School of Medicine.
- Dartmouth teaching certificate, Dartmouth center for the advancement of learning (2006).

**RESEARCH
SUPPORT**

Ongoing:

28. Project Title: TANUH: AI-Centre of Excellence in Healthcare

Duration: July 2025 - Mar 2029

Funding agency: Ministry of Education, Govt. of India

Chief Project Manager (PI): Phaneendra K. Yalavarthy and Co-Chief Project Manager: Sriram Ganapathy

Total Cost: ~\$38 Million

27. Project Title: Localized Corrosion Inhibition in Sour Media for Welded C-steel of the Oil and Gas Pipelines Duration: Apr 2024 - Mar 2027

Funding agency: Qatar National Research Fund (QNRF)

Principal Investigator: Phaneendra K. Yalavarthy

Total direct cost to IISc: ~\$78650

Total funding available: ~\$739167 (Qatar Partner: Qatar University, Doha)

Completed:

26. Project Title: Developing a Robust Deepfake Detection Toolkit for Medical Imaging

Duration: Feb 2025 - Sep 2025

Funding agency: Accenture Ventures

Principal Investigator: Phaneendra K. Yalavarthy

Total cost: ~\$72000

25. Project Title: WIPRO GE-CDS Collaborative Laboratory of Artificial Intelligence in Medical Imaging & Healthcare

Duration: June 2020 - Mar 2024

Funding agency: WIPRO-GE HealthCare, Bangalore

Principal Investigator: Phaneendra K. Yalavarthy

Total Cost: ~\$120000

24. Project Title: Smart Corrosion Control for Ultra-High Heat Flux Steam Generators

Duration: Apr 2020 - Dec 2023

Funding agency: Qatar National Research Fund (QNRF)

Principal Investigator: Phaneendra K. Yalavarthy

Total direct cost to IISc: ~\$74100

Total funding available: ~\$618000 (Qatar Partner: Qatar Shell Research & Technology Center)

23. Project Title: Development of Novel Deep Learning Methods for Fast and Accurate Segmentation of Neuroimages

Duration: March 2021 - Feb 2024

Funding agency: Department of Biotechnology (DBT), Govt. of India
Principal Investigator: Phaneendra K. Yalavarthy
Total Cost: ~\$23500

22. Project Title: Indo-Norwegian collaboration in Autonomous Cyber-Physical Systems (IN-CAPS)

Duration: July 2019 - December 2023

Funding agency: The Research Council of Norway (NFR)

Principal Investigator: Phaneendra K. Yalavarthy

Total direct cost to IISc: ~\$57000

Total funding available: ~\$361000 (Norwegian Partner: University of Agder, Norway)

21. Project Title: Deep Learning for Improving Photoacoustic Imaging

Duration: Jan 2019 - June 2022

Funding agency: Department of Science and Technology (DST), Govt. of India

Principal Investigator: Phaneendra K. Yalavarthy

Total Cost: ~\$33500

20. Project Title: Deep Learning Methods for Improving Low-Dose Computed Tomography Perfusion Imaging

Duration: Mar 2019 - Mar 2022

Funding agency: Science and Engineering Research Board (SERB), Govt. of India

Principal Investigator: Phaneendra K. Yalavarthy

Total Cost: ~\$50000

19. Project Title: TCI-SITE Assessment

Duration: Jan 2021 - Dec 2021

Funding agency: Becton-Dickinson Technology, Bangalore

Principal Investigator: Phaneendra K. Yalavarthy

Total Cost: ~\$25000

18. Project Title: Deep Learning-based Sparse CT Reconstruction from Missing View Sinogram

Duration: Mar 2021 - Sep 2021

Funding agency: GE HealthCare, Bangalore

Principal Investigator: Phaneendra K. Yalavarthy

Total Cost: ~\$45000

17. Project Title: Advanced image reconstruction methods for micro-CT imaging in petrology

Duration: June 2020 - July 2021

Funding agency: Shell Technology Centre, Bangalore

Principal Investigator: Phaneendra K. Yalavarthy

Total Cost: ~\$102000

16. Project Title: Deep Learning in Oral Cancer Screening Image Analysis

Duration: Mar 2019 - Mar 2021

Funding agency: Biocon Foundation, Bangalore

Principal Investigator: Phaneendra K. Yalavarthy

Total Cost: ~\$16600

15. Project Title: Few-shot transfer learning in medical imaging from sparse annotations

Duration: July 2020 - Dec 2020

Funding agency: GE HealthCare, Bangalore

Principal Investigator: Phaneendra K. Yalavarthy

Total Cost: ~\$48600

14. Project Title: Edge aware micro-CT Reconstruction for Petrology

Duration: June 2019 - May 2020

Funding agency: Shell Technology Centre, Bangalore
Principal Investigator: Phaneendra K. Yalavarthy
Total Cost: ~\$102000

13. Project Title: IFTAS-CDS Collaborative Laboratory of Data Science & Engineering
Duration: Apr 2019 - Mar 2020
Funding agency: IFTAS, Mumbai
Principal Investigator: Phaneendra K. Yalavarthy
Total Cost: ~\$20000

12. Project Title: Intelligent Image Analysis Methods in Digital Rock
Duration: May 2018 - May 2020
Funding agency: Shell Technology Centre, Bangalore
Principal Investigator: Phaneendra K. Yalavarthy
Total Cost: ~\$102000

11. Project Title: Deep Learning Based Optimisation of scan time in Positron Emission Tomography
Duration: April 2018 - Sep 2018
Funding agency: GE HealthCare, Bangalore
Principal Investigator: Phaneendra K. Yalavarthy
Total cost: ~\$16600

10. Project Title: Training on Deep Learning for Medical Imaging
Duration: May 2019 - June 2019
Funding agency: GE HealthCare, Bangalore
Principal Investigator: Phaneendra K. Yalavarthy
Total cost: ~\$16600

9. Project Title: Development of novel algorithms for quantitative photoacoustic imaging of blood and lymphatic vasculature
Duration: June 2014 - June 2017
Funding agency: Department of Biotechnology (DBT), Govt. of India
Principal Investigator: Phaneendra K. Yalavarthy
Total cost: ~\$64000

8. Project Title: Towards real-time quantitative photoacoustic imaging of vascular abnormalities for near-future application in oncology (RTQ-PAI)
Duration: October 2015 - September 2016
Funding agency: European Research Council INDIGO Policy
Principal Investigator: Phaneendra K. Yalavarthy
Total direct cost to IISc: ~\$14800
Total cost: ~\$36100 (European Partner: University of Bern and University of Twente)

7. Project Title: Accelerating Diffuse Optical Tomographic Image Reconstruction Using Graphics Processing Units and Multicore Architectures
Duration: June 2013 - June 2016
Funding agency: Department of Biotechnology (DBT), Govt. of India
Principal Investigator: Phaneendra K. Yalavarthy
Total cost: ~\$20000

6. Project Title: Development of Novel Computational Methods for Optical Molecular Tomographic Imaging
Duration: September 2013 - August 2016
Funding agency: Department of Biotechnology (DBT)
Principal Investigator: Phaneendra K. Yalavarthy
Total cost: ~\$24000

5. Project Title: Development of Novel Algorithms for Three Dimensional Near Infrared Tomographic Imaging of Breast

Duration: January 2011 - March 2014

Funding agency: Department of Atomic Energy (DAE-BRNS)

Principal Investigator: Phaneendra K. Yalavarthy

Total cost: ~\$17000

4. Project Title: Spectroscopic analysis of near infrared images for vein detection

Duration: February, 2011 - March, 2011

Funding agency: Vphore Technologies, Bangalore

Principal Investigator: Phaneendra K. Yalavarthy

Total cost: ~\$6000

3. Project Title: Development of computationally efficient algorithms for three-dimensional near infrared tomographic imaging of breast.

Duration: August 2009 - July 2010

Funding agency: The Apple Research and Technology Support (ARTS) programme

Principal Investigator: Phaneendra K. Yalavarthy

Total cost: \$30000

2. Project Title: Setting up medical imaging lab

Duration: Mar 2009 - Mar 2010

Funding agency: IISc, Bangalore (faculty start-up grant)

Principal Investigator: Phaneendra K. Yalavarthy

Total cost: ~\$35000

1. Project Title: Three-dimensional near infrared imaging of pathophysiological changes within the breast

Duration: Feb 2006 - Feb 2008

Funding agency: DoD Breast Cancer Pre-Doctoral Fellowship, USA

Principal Investigator: Phaneendra K. Yalavarthy

Total cost: \$90000

PERSONAL
DETAILS

Date of Birth: August 21, 1979.

Marital Status: Married with two children.

Citizenship: Indian.

Compiled on: October 1, 2025