

## Dr. Pulak Mondal

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Kolkata 700009, West Bengal, India.  
West Bengal, Pin-721302, India

PRESENT POSITION

- **Assistant Professor, Institute of Radio Physics and Electronics, University of Calcutta** *3rd, May 2016 to Present*  
**Research Interest:** VLSI based embedded system design for signal/image processing ,Biomedical Embedded Systems, VLSI Circuits and Systems.

PREVIOUS EXPERIENCE

- **Assistant Professor, ECE Dept., Indian Institute of Information Technology, Guwahati, India** *1st, Jun 2015 to 2nd, May 2016*
- **Visiting Research Scholar** *1st, Jan 2015 to 31st, Mar 2015*  
Center for Optical Research and Education, Utsunomiya University, Japan  
(Directed by Prof. Barry Cense)  
**Image Segmentation:** Automated segmentation and analysis of retinal Optical Coherence Tomography (OCT) images.

EDUCATION

**IIT Kharagpur**, West Bengal, India

**Ph.D.** Electronics & Electrical Communication Engineering, *December 2015*

- Thesis Topic: *Hardware Based Acceleration of Image Registration Process*
- Advisors: Prof. Swapna Banerjee

**M.Tech.**, Microelectronics & VLSI Design, *May 2011*

- Advisor: Prof. Swapna Banerjee

**Jalpaiguri Government Engineering College**, West Bengal, India

**B.Tech.**, Electronics and Communication Engineering, *May 2009*

- Advisor: Dr. Ansuman Sarkar

PUBLICATIONS

1. P. Mondal, S. Banerjee, FPGA-accelerated adaptive projection-based image registration, *Journal of Real-Time Image Processing(2020)*,<https://doi.org/10.1007/s11554-020-00952-5>.
2. P. Mondal, S. Banerjee, A reconfigurable memory based fast VLSI architecture for computation of the histogram, *IEEE Transactions on Consumer Electronics*, Vol. 65, No. 2, pp. 128 – 133, May 2019.
3. P. Mondal, S. Banerjee, and P. K. Biswal, FPGA Based Accelerated 3D Affine Transform for Real-time Image Processing Applications, *Computers and Electrical Engineering*. Volume 49, January 2016, Pages 69–83.
4. Ashhutosh Mishra, Pulak Mondal , Swapna Banerjee, VLSI Assisted Non-rigid Registration Using Modified Demons Algorithm, *IEEE Transactions on Very Large Scale Integration Systems*, Vol. 23 , No. 12, pp. 2913 – 2921 , Dec. 2015 .

5. P. K. Biswal, P. Mondal, and S. Banerjee, Parallel architecture for accelerating affine transform in high-speed imaging systems, *Journal of Real-Time Image Processing*, vol. 8, no. 1, pp. 69-79, Nov. 2011.
6. P. Mondal, P. Biswal, and S. Banerjee, Acceleration of Affine Transform for Multiplane Image Stabilization in Digital Camera, *ijcee*, vol. 4, no. 5, pp. 701-705, 2012.
7. P. Mondal and S. Banerjee, Motion estimation in medical video sequences using affine transform, *2012 25th IEEE International Symposium on Computer-Based Medical Systems (CBMS)*, pp. 1-4, Jun. 2012.
8. P. Mondal, P. K. Biswal, and S. Banerjee, Registration of 3D Medical Images using Parallel Affine Transform, *Imaging and Signal Processing in Healthcare and Technology*, pp. 39-45, 2011.
9. A. Mishra, P. Mondal, and S. Banerjee, Modified Demons deformation algorithm for non-rigid image registration, *2012 4th IEEE International Conference on Intelligent Human Computer Interaction (IHCI)*, pp. 15, Dec. 2012.
10. P. Mondal , A. Mishra, and S. Banerjee, A Less Computation Intensive Non-Rigid Image Registration by Modifying Demons Deformation Algorithm, *2013 International Conference on Advances in Electrical Engineering (ICAEE 2013)*, Dec. 2013.
11. P. Mondal , S. Banerjee, A Memory Based Parallel Architecture for Computation of Histogram, *International Conference on VLSI and Signal Processing*, January 10-12, 2014.
12. A. Mishra, P. Mondal, and S. Banerjee, 2D/3D Nonrigid Image Registration by an Efficient Demons Approach, *27th IEEE International Symposium on Computer-Based Medical Systems (CBMS-2014)*, May 27th to May 29th 2014.
13. M. Ghosh, S. Banerjee, S. S. Borah, P. Mondal, Single OTRA-Based Implementation of Second-Order Band Reject Filter (Three Configurations), *In: Goel N., Hasan S., Kalaichelvi V. (EDS) Modelling, Simulation and Intelligent Computing. MoSICom 2020. Lecture Notes in Electrical Engineering*, vol.659, Springer, Singapore, 2020.
14. S. Banerjee, S. S. Borah, M. Ghosh, P. Mondal, Three Novel Configurations of Second Order Inverse Band Reject Filter using A Single Operational Transresistance Amplifier, *TENCON IEEE Region 10 Conference*, India, Oct 16-20, 2019.
15. S. Banerjee, P. Mondal, M. Ghosh, Novel Realization of Second Order Inverse Bandreject Filter and Inverse Allpass Filter Using Operational Transresistance Amplifier, *IEEE Region 10 Symposium (TENSYP)*, 2019. EC Accession Number: 19315914, DOI: 10.1109/TENSYP46218.2019.8971031.
16. S. Banerjee, M. Ghosh, P. Mondal, OTRA based Realization of Second Order Inverse Lowpass Filter and Inverse Bandpass Filter, *8th IEEE International Conference on Communication and Signal Processing (ICCSP-2019)*, India, April 4-6, 2019. DOI: 10.1109/ICCSP.2019.8698012.

TECHNICAL  
SKILLS

- Programming/script languages: C, CUDA C
- Scientific software: MATLAB
- Hardware Description Languages: Verilog HDL ( For FPGA prototyping )
- Tools: Synopsys, Xilinx, Cadence.
- Word/document processing: LATEX, MS Office

SCHOLARSHIPS

- GATE Scholarship, During 2009-2011 for M.Tech.
- MHRD Ph.D. Scholarship, During 2011-2014.

ATTENDED  
SHORT-TERM  
COURSE

- Medical Imaging and image processing, 04-07 July , 2012, IIT Kharagpur.

ATTENDED  
CONFERENCES

- Computer based medical system (CBMS-2012), 20-22 June , 2012, University Campus Bio-Medico di Roma, Italy.
- Intelligent Human Computer Interaction, December 27-29, 2012, IIT Kharagpur, India.
- International Conference on VLSI and Signal Processing, January 10-12, 2014, IIT Kharagpur.