•**Name and Designation:** Swapna Banerjee, Visiting Professor

•**Organization** **:** Indian Institute of Technology Kharagpur.

•**Educational Qualification :**

Degree	Year	Subject	Institute/University	Location	Remarks
B.E.	1971		Jadavpur University		
M.E.	1974		Jadavpur University		
Ph.D.*	1981		I.I.T., Kharagpur		

* Title of Ph.D. Thesis: Studies on MOS-CCD and graded Heterojunction Devices

•**Professional Experience (last 5)**

Institute	Position Held	From	To	Nature of Job
I.I.T. Kharagpur	Visiting Professor	Jan. 2015	Till date	Teaching and Research
I.I.T. Kharagpur	Professor & Head of the Dept.	July 2012	December 2014	Teaching, Research and dept. administration
I.I.T. Kharagpur	Professor	May. 1999	December 2014	Teaching and Research

•**Specialization and Expertise:**

- VLSI based embedded system design for signal/image processing.
- Biomedical Instrumentation.
- Device modeling
- Low power circuits
- Mixed-signal design

•**Awards and Distinctions:**

- Matsumae International Foundation Award, 1985, Japan.
- Best Women in Engineering Paper Award, MeMea 2015, Italy.
- DST-Lockheed Martin India Innovation Growth Programme (IIGP) Award, 2015.

•**Top ten publications in last ten years:**

1) S. Banerjee et.al, “An Efficient Constant Multiplier Architecture Based on Vertical-Horizontal Binary Common Sub-expression Elimination Algorithm for Reconfigurable FIR Filter Synthesis” IEEE Transactions on Circuits and systems-I: Regular paper, vol.62, No-4, April , 2015.
2) S. Banerjee et.al, “Modelling, verification, and calibration of a photoacoustics based continuous non-invasive blood glucose monitoring system,” Rev. Sci. Instrum., vol. 86, p. 064901, 2015. http://dx.doi.org/10.1063/1.4922416.
3) S. Banerjee et.al,”VLSI-Assisted Non-regid Registration Using Modifying Demons Algorithm”, IEEE Transaction on very large scale integration (VLSI) system, doi-10.1109/TVLSI.2014.2382134,Issue: 99,ISSN-1063-8210, 2015.
4) S. Banerjee et.al, Än Efficient VLSI Architecture of a Reconfigurable Pulse-Shaping FIR Interpolation Filter for Multistandard DUC”, IEEE Transaction on very large scale integration (VLSI) system, Vol:23 ,Issue: 6, pp- 1150 – 1154, 2014.
5) S. Banerjee et.al, “Efficient Hardware Implementation of Encoder and Decoder for Golay Code”, IEEE Transaction on very large scale integration (VLSI) system, Vol: 23, Issue: 9, pp-1965 - 1968, DOI: 10.1109/TVLSI.2014.2346712, 2014.
6) S. Banerjee et.al,”An FPGA-based architecture of DSC_SRI units specially for blind ultrasound systems”, Journal of Real-Time Image Processing, Vol. 10, Issue 3, pp 573-595, Springer, 2012.
7) S. Banerjee et.al, “Simulation of digital scan conversion for ultrasound systems using a digital signal processor”, Journal of Ultrasound (the journal of the British Medical Ultrasound Society), Vol. 19, No. 3, pp.140-150, August 2011.

8) S. Banerjee et.al, "An efficient pass-parallel architecture for embedded block coder in JPEG 2000", IEEE Transactions on Circuits and Systems for Video Technology, Vol. 21, No. 6, pp. 825- 836, June, 2011.
9) S. Banerjee et.al, "An Efficient Architecture for 3-D Discrete Wavelet Transform", IEEE Transactions on Circuits and Systems for video technology, Vol. 20, No. 2, pp. 286-296, February 2010.
10) S. Banerjee et.al, "Quantitative dimensions of histopathological attributes and status of GSTM1-GSTT1 in oral submucous fibrosis", Tissue and Cell 40 (6), pp. 425-435, 2008.

•Summary of research output (papers, patents, technology development)

Papers in Journals: 52, Paper in Conferences:92

Patents:

International Patent:

i) (EN) CORDIC-Unit, (DE) CORDIC- EINHEIT, WO/2003/054689, International Application No. PCT/EP2002/014695, Publication Date: 03.07.2003. (http://www.wipo.int/pctdb/en/wo.jsp?WO=2003054689).
ii) CORDIC unit 7,606,852, October 20, 2009, USA. (http://patft.uspto.gov/netacgi/nph-Parser?patentnumber=7606852).

National Patents:

iii) An improved apparatus for Ultrasonography using a continuous wave Doppler system. (Patent certificate no.: 206361 dt. 27.04.2007).
iv) Automated Irrigation Controller, 6/CAL/1999, AA. (In collaboration with Department of Agriculture and Food Engineering, Indian Institute of Technology, Kharagpur).
v) A Continuous Soil Moisture Recorder, 7/CAL/1999, 201951(In collaboration with Department of Agriculture and Food Engineering, Indian Institute of Technology, Kharagpur).
vi) Granular Matrix Soil Moisture Sensor, (In collaboration with Department of Agriculture and Food Engineering, Indian Institute of Technology, Kharagpur) 705/CAL/2000, 212152.
vii) An Automated Irrigation System (In collaboration with Department of Agriculture and Food Engineering, Indian Institute of Technology, Kharagpur) (Patent certificate no: 198539 dt. 15.05.2002).

Patent filed:

i) Non-invasive blood glucose measuring system, 242/KOL/2008, Request for filing the FER on 17 March 2010.
ii) Distributed Binary Cell Realizing Hybrid Current Steering Architecture Based Digital to Analog Converter Filed (Ref : E-2/2591/2013-KOL, Patent application no. 724/KOL/2013 dated 18.06.2013).

iii) System and Method for non- invasive Measurement of Concentration of Analysis in a Biological Sample: Filed (Ref : 1664/ASA/PP-1276/IIT,KGP, Patent Application No. 670/KOL/2013 dated 05.06.2013).

•Five major sponsored R&D projects completed/handled

i. "Special Manpower Development Programme for VLSI Design & related Software (SMDP-II)", (Rs. 1.5 Cr), Sponsored by Ministry of Communication and Information Technology, New Delhi (2005-2010) as Co-ordinator.
ii. "Design of radiation hardened data converters", (HDC) – Sponsored by ISRO, Space Technology Cell, I.I.T Kharagpur. (Total funding Rs. 31,33,200 Lakhs) (2009-2012) as Principal Investigator in charge.
iii. "Design & Development of non-invasive blood glucose measuring system", (NBG) – Sponsored by DIT, New Delhi. (Total funding Rs. 27.00 Lakhs) (2009-2012) as Principal Investigator in charge.
iv. "An embedded low cost portable CW Doppler ultrasonography system", (LCU) - Sponsored by DST, New Delhi. (Total fund Rs. 24,79,800/-) (2010-2013) as Principal Investigator in charge.
v. "Development of a computer aided diagnosis system using Doppler ultrasonography spectrogram"(ASU) Sponsored by MHRD, New Delhi. (Total fund Rs. 33,50,000/-) (2014-2017) as Principal Investigator in charge.

•Technology development/translation/initiation:

1. A low cost CW Doppler Ultrasound Spectrogram system.
2. Development of non-invasive blood glucose measuring system.