

# Rana Mukherji

Citizenship : Indian • Date of birth : 28 March 1980

## Contact

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## Career Objective

To make a positive impact in my field of activity, leading to organization growth by creative application of my value based conviction, job skills and professional dexterity.

## Career Achievements

- President Scout Award Winner
- Won Best Paper Award at International Conference on Systemics, Cybernetics and Informatics, Hyderabad, INDIA
- Member , Educational Consultants of India Ltd. (A Govt. of India Enterprise)
- **Member Editor Review Committee, International Journal of Scientific & Engineering Research, Houston, USA**
- **Member , Editor Review Committee, The Second International Conference on Informatics & Applications -2013 (ICIA- 2013) to be held at Technical University of Lodz, Poland sponsored by IEEE Poland Section , Universiti Sultan Zainal Abidin, MALAYSIA and The Society of Digital Information and Wireless Communications (SDIWC), USA**
- Recognized Examiner for University of Rajasthan, Rajasthan Technical University and Jaipur National University.

**Work Experience****Total Work Experience 8 years****THE ICFAI UNIVERSITY, JAIPUR, INDIA****Faculty Member, Faculty of Science and Technology****July, 2012 to till date****THE ICFAI UNIVERSITY, DEHRADUN, INDIA****Faculty Member, Faculty of Science and Technology****March, 2008 to July 2012**

- ✓ Worked for Student Internship Program
- ✓ Guided over 15 B.Tech. projects
- ✓ Published around 16 research papers in national and international journals and conference proceedings.

**JAIPUR NATIONAL UNIVERSITY, JAIPUR, INDIA****Reader, School of Engineering and Technology****August 2005 to March, 2008**

- ✓ Established Electronics CAD related Laboratories.
- ✓ Developed departmental website.
- ✓ Guided more than ten B.Tech. projects
- ✓ Coordinated Students Campus Placement Preparation Program
- ✓ Designed Syllabi for Graduate (B.Tech.) & Post Graduate (M.Tech.) Courses

**INSTITUTE OF TECHNOLOGY AND MGMT, BHILWARA, INDIA****Lecturer, Department of Electronics and Communication****August 2004 to July, 2005**

- ✓ Established Electronics CAD and Instrumentation related Laboratories.
- ✓ Coordinated Students Campus Placement Preparation Program

**CENTRAL ELECTRONICS ENGINEERING RESEACH INSTITUTE (CSIR), PILANI, INDIA****Project Trainee, Information Technology Group****October 2003 to July 2004**

- ✓ Understanding ASIP architecture.
- ✓ Preparation of data sheet comprising of data and control flow diagrams, and validation documents.
- ✓ Modeling of ASIP using SystemC and Windows Platform. Developed a Rich Text Format (RVF) editor for internal use;

**Academic Credentials****[2012- till date]****Ph.D. (Electronics and Communication Engineering) – (Perusing)****Manipal University, Jaipur, INDIA****[2002-2004]****UCIM, Panjab University,  
Chandigarh, INDIA****M.Tech. (Instrumentation) with 67%****[2000-2002]****Devi Ahilya University, Indore, INDIA****M.Sc.(Electronics) with 71.57%****[ 1999-2000 ] DOEACC****(An Autonomous Body of Govt. of India )****O Level with Grade B****Technical Skills**

- Hardware Language : VHDL, SystemC
- Tools Used : MultiSim, UltiBoard, MATLAB, ModelSim, Mentor FPGA Advantage ,Xilinx Project Navigator, ActiveHDL, Tanner, ARM-KEIL

- Software Language : C, C++, Embedded C (for 8051)
- Platforms : WindowsNT, Linux
- Assembly Languages : 8085,8086,8051

### Post Graduate Project Theses

#### Development of SystemC Modeling of Formant based Application Specific Instruction Set Processor (ASIP) for Text-to-Speech Conversion (CEERI, Pilani)

##### Project Details

This project has been sponsored by DIT. The objective is to develop the ability to design State-of-Art Application Specific Processor for Speech Synthesis and to demonstrate its capabilities through FPGA implementation and technology demonstration prototype system for converting unlimited vocabulary Hindi Text-to-Speech in real time. This project begins with the analysis of Klatt's C-code and will be delivering the Methodology to develop Formant based parametric Speech Synthesizer i.e. Voice Chip, and Rule based Text processor i.e. Rule chip. My responsibilities in this project start with the behavioral model implementation of the instruction set (IS) of the said processor along with the memory will be developed using SystemC so that an application can be tested from functional point of view, one would be able to write programs in the assembly language of the ASIP, examine the syntax of the program, generate the machine code, load and run the binary code using the developed model. In continuation to the above said work exhaustive Functional Testing and Verification of the ASIP has been done using comparative verification method (by writing Test-benches in SystemC).

#### Design Studies Of Embedded System For Thyatron Auto-Ranging (CEERI , Pilani)

##### Project Details

Hydrogen Thyatron is a high peak power switch, which uses gas as switching medium. The effect of internal gas pressure on resistance of the heater wire has been analyzed and the design of the Thyatron auto-ranging has been carried out.

#### Microcontroller 8051 Based Electronic Control For Automatic Clay Pigeon Target

##### Machine

##### Project Details

Clay pigeon target machine is a system made for sports purposes. The project is made for the electronic automation of the machine using 8051 microcontroller.

### Professional Memberships

- World SystemC Community, **LA, USA**
- VLSI Society of India, Bangalore, **INDIA**
- Educational Consultants of India Ltd, **INDIA**
- International Association of Engineers(IAENG), **Hong Kong**
- The Institute for Computer Sciences, Social Informatics and Telecommunications Engineering(ICSSITE), **Belgium**
- The Society of Digital Information and Wireless Communications, **USA**
- International Association of Computer Science and Information Technology (IACSIT), **Singapore**

### Workshop / Conferences Attended

- Workshop on Tanner Tools and Verilog (Feb 25-26, 2012) held at The ICFAI University, Dehradun, INDIA
- Workshop on VLSI Design (May 22-24, 2010) held at The ICFAI University, Dehradun, INDIA
- Workshop on High Vacuum Plasma and Thin Film Technology (Mar 31-Apr 3, 2009), conducted by Technology Application Services, Delhi at Jaipur National University, Jaipur, INDIA
- Workshop on Mask Design (Dec 18-20 , 2008) sponsored by Intel India Ltd, at IcfaiTech, Hyderabad, INDIA
- Workshop on MATLAB (Dec 21-23 , 2008) sponsored by Cranes India at IcfaiTech, Hyderabad, INDIA
- Workshop on Tanner Tools Pro(Feb 2-3 , 2008) sponsored by Tanner EDA, INTEGRATED MICROSYSTEM at IcfaiTech, Jaipur, INDIA

- EDA Tech Forum-2007(Aug 21, 2007) sponsored by Mentor Graphics ,USA at New Delhi, INDIA
- International Conference on Recent Advancements and Applications of Computer in Electrical Engineering (March 24-25, 2007) sponsored by IEEE AES COM LEO Society Chapter India, organized by Engineering College , Bikaner, INDIA
- International Conference on Systemics, Cybernetics and Informatics (Jan 3-7, 2007) organized by Pentagon Research Centre , Hyderabad, INDIA
- “Challenges in SoC Design & Verification “(Dec 11-22, 2006)by sponsored by AICTE and organized by MNIT, Jaipur, INDIA
- “ASIC Design and CAD Tools for VLSI”(April 6-8, 2006) organized by Cadence Design Systems(I) Ltd, I2IT, Pune and SADTM ,Jaipur, INDIA
- “National Workshop on VLSI Design and Embedded Systems-2006”(Feb 24-26,2006) sponsored by AICTE, UGC, DST and Honeywell India at BITS, Pilani, INDIA
- EDA Tech Forum-2005(Aug 17, 2005) sponsored by Mentor Graphics ,USA at New Delhi. Custom LSI Design Workshop (June 6-18, 2005) sponsored by VLSI Society of India and KarMic Design Center, Manipal at KarMic Training Center, Manipal, INDIA

## Publications

### BOOK PUBLISHED

- Solutions for University Previous years papers, Neelkanth Publication, Jaipur

### PAPERS PUBLISHED IN CONFERENCE PROCEEDINGS (10)

- **Rana Mukherji** , Avadesh P. Singh, Pankaj Bande, “Design of a Universal Robotic Model And Its Application In Entertainment Robotics”, Proceedings of National Conference on Recent Trends in Mechatronics, Nanotechnology and Robotics-2006 , Rourkela, Vol. 1, pp 322-325, 2006
- **Rana Mukherji**, Avadesh P. Singh, Puneet Kalia, Shilpa Takkar, A. Agrawal, M. Yadav, “Development of a Wireless Universal Robot and Its Various Applications” , Proceedings of International Conference on Advanced In Electronics & Communication Technology , Nawashaher, Vol. 1, pp 260-263, 2006.
- **Rana Mukherji**, Avadesh P. Singh, Puneet Kalia, Shilpa Takkar, A. Agrawal, M. Yadav “Design of a Miniature Mobile Robot” Proceedings of International Conference on Recent Advancements and Applications of Computer in Electrical Engineering , Bikaner, Vol. 1, pp 1258-1260, 2007
- **Rana Mukherji**, Avadesh P. Singh, Puneet Kalia, Shilpa Takkar, A. Agrawal, M. Yadav “A Methodology for the SystemC Model Design of Application Specific Instruction Set Processor (ASIP) for Hindi Text-to-Speech Conversion” , Proceedings of International Conference on Systemics, Cybernetics and Informatics, Hyderabad, Vol. 1, pp 633-636, 2007.
- **Rana Mukherji**, Avadesh P. Singh, Puneet Kalia, Shilpa Takkar, A. Agrawal, M. Yadav, “Development of an Autonomous Robotic Model “, Proceedings of International Conference on Systemics, Cybernetics and Informatics, Hyderabad Vol. 1, pp 192-194, 2007.
- T R Choudhary , **Rana Mukherji**, Amit Chatterjee, “A FPGA-Based Pipelined Distributed Arithmetic Implementation of 2-D Discrete Cosine Transform”, Proceedings of National Conference On Architecturing Future IT Systems, Indore, Vol. 1, pp 242-246, 2007
- Amit Kumar Chatterjee, **Rana Mukherji**, Shudhashu Tripathi , “An Improved Adaptive Cross Pattern Search (IACPS) Algorithm for Block Motion Estimation in Video Compression”, Proceedings of International Conference on Computational Intelligence and Multimedia Applications- 2007 , Sivakasi, Vol 3, pp 89 – 96, (Also available at IEEEExplore Computer Society Library),2007.
- **Rana Mukherji**, Puneet Kalia, Ashok Kumar “System Level Design Using SystemC”, Proceedings of NCMDES 09 , Ambala, Vol 1, pp 332-336, 2009.
- **Rana Mukherji**, Md. R. Ansari, R.K. Chaurasia, M. Sharma, “JHDL- Towards a New Standard for System Level Design” , Proceedings of National Conference of Emerging Trends in Advanced Computing and Infomatics , Meerut, Vol.1, pp 250-254, 2010 .
- **Rana Mukherji**, Md Rashid Ansari, R.K. Chaurasia, Ranjan Mishra, Manishita Das, “Off-Line Hand Written Hindi Character Recognition Using Ant-Miner Algorithm”, National Conference on Revolutionary Advancements in Communication and Electronics(RACE-10), Alwar, Vol.1, pp 49-52, 2010.

### PAPERS PUBLISHED IN JOURNALS (12)

- **Prajanam Project Team**, S S Mahant Shetti “Euclidean Distance Computation Algorithm for QAM

Applications”, VSI- VISION, Vol.1, pp 25-34, 2005.

- **Rana Mukherji**, “SystemC-based Design Approach for Modeling Reconfigurable Computing Systems”, The Icfai University Journal of Science and Technology, Vol 4, No.3, pp 30-40, 2008.
- A.P.Singh, A.P.Singh, **Rana Mukherji**, “India- A Prospective Market for Third Generation (3G) Mobile Technology- A Survey and Analysis”, The Alternative- A Journal of Management Studies and Research of Birla Institute of Technology, Mesra , Vol 8, No. 1, pp 5-33, 2008 .
- **Rana Mukherji**, T R Choudhary , Amit Chatterjee, “An Approach to Implement AMBA APB Timer IP Using SystemC” , Journal of Computer Science and Mathematics, Vol. 1, No. 3, pp 310-318, 2010.
- **Rana Mukherji**, T R Choudhary, Amit Kumar Chatterjee, “A FPGA-Based Implementation of an 802.11a Transmitter” , International Journal of Electronics and Communication Engineering, Research India Publication, New Delhi, Vol. 3, No. 1 , pp 351-356, 2010.
- Nirmal Kumar J.I. , Manishita Das , **Rana Mukherji** & Rita N. Kumar, “Assessment of hydro-chemical characteristics of a tropical wetland system using Principal Component Analysis: A case study” , IUP Journal of Environmental Sciences , Hyderabad, Vol. 5, No.1, pp 37-50, 2011.
- Nirmal Kumar J.I. , Manishita Das , **Rana Mukherji** & Rita N. Kumar , “Assessment of Heavy Metal Pollution in Macrophytes, Water and Sediment of a Tropical Wetland System Using Hierarchical Cluster Analysis Technique” , accepted for publication, Journal of International Environmental Application & Science, Turkey, Vol. 6 , No.1,pp 149-156 ,2011.
- **Rana Mukherji**, Amit Kumar Chatterjee & Manishita Das, “Implementation of an Efficient Multiplier Architecture Based on Ancient Indian Vedic Mathematics using SystemC” , KIST Journal of Science and Technology, Rawanda, Africa, Vol. 1, No. 1, pp 39-43, 2011.
- Nirmal Kumar J.I. , Manishita Das , **Rana Mukherji** & Rita N. Kumar , “Assessment of zooplankton diversity of a tropical wetland system”, International Journal of Pharmacy & Life Sciences, India , Vol. 2, No. 8, pp 983-990,2011.
- Nirmal Kumar J.I. , Manishita Das , **Rana Mukherji** & Rita N. Kumar , “Heavy Metal Contamination of Selected Aquatic Macrophytes in Two Distinct Seasons: A Case Study of Varasda Wetland,Gujarat, India”, Turkish Journal of Science and Technology, Turkey, Vol. 7, No. 1, pp 7-17, 2012.
- **Rana Mukherji**, Manishita Das, “System Level Modeling Methodology of Application Specific Instruction Set Processor (ASIP) Using SystemC” , DIU - Journal of Science and Technology, Dhaka, Bangladesh, Vol. 7, No. 1, pp 44-49, 2012.
- Nirmal Kumar J.I. , Manishita Das , **Rana Mukherji** & Rita N. Kumar,” Trace Metal Contents in Water, Sediment and Hydrophytes at a Freshwater Wetland in Central Gujarat, India”, Bulletin of Environmental and Scientific Research, United Kingdom, Vol. 1, No. 1, pp16-24 2012 .

#### Personal Dossier

- Date of Birth : March 28th, 1980
- Father's Name : Mr. S. Mukherji
- Marital Status : Married
- Spouse's Details : Dr. Manishita Mukherji (PhD in Environmental Sciences)
- Languages Known : English, Hindi, Bengali, Marwari, Punjabi

#### References

- **Dr. R.P.Gupta**, eX-Scientist ‘G’ (Director Grade), Central Electronics Engineering Research Institute (A Research Institute of Govt. of India), Pilani, INDIA
- **Dr. Kota Solomon Raju**, Principle Scientist , Digital Systems Group, Central Electronics Engineering Research Institute (A Research Institute of Govt. of India ), Pilani, INDIA

Date : 04/11/2012

(Rana Mukherji)