Karthikeyan Lingasubramanian

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EDUCATION:

University of South Florida, USA

- **Doctor of Philosophy in Electrical Engineering**   (August 2004 - May 2010)

- **Master of Science in Electrical Engineering**   (August 2002 - August 2004)

Kumaraguru College of Technology affiliated to Bharathiar University, India

- **Bachelor of Engineering in Electronics and Communication Engineering**
                    (June 1997 - June 2001)

WORK-EXPERIENCE:

- **Assistant Professor**   (From October 2011 – Present)

  Department of Electrical and Computer Engineering, University of Alabama at Birmingham, USA

- **Postdoctoral Research Assistant**   (From November 2010 – September 2011)

  Electronic Design Automation Group, Department of Control and Computer Engineering, Politecnico di Torino, Italy

RESEARCH ACTIVITIES:

Journal Publications:

- K. Lingasubramanian, S. M. Alam and S. Bhanja, "Maximum Error Modeling for Fault-Tolerant Computation using Maximum *a posteriori* (MAP) Hypothesis", *Microelectronics Reliability*, vol. 51, no. 2, pp. 485-501, 2011. *Impact Factor*: 1.137, *Citations*: 1

- T. Rejimon, K. Lingasubramanian and S. Bhanja, "Probabilistic Error Modeling for Nano-Domain Logic Circuits", *IEEE Transactions on Very Large Scale Integration (VLSI) Systems*, vol. 17, no. 1, pp. 55-65, 2009. *Impact Factor*: 1.22, *Citations*: 30

- S. Bhanja, K. Lingasubramanian and N. Ranganathan, "A Stimulus-free Probabilistic Switching Model for Sequential Circuits using Dynamic Bayesian Networks", *ACM Transactions on Design Automation of Electronic Systems*, vol. 11, no. 3, pp. 773-796, 2006. *Impact Factor*: 0.52, *Citations*: 9

Conference Publications:

- N. B. Gunti and K. Lingasubramanian, "Efficient Static Power Based Side Channel Analysis for Hardware Trojan Detection Using Externally Controlled Sleep Transistors", *Submitted in the IEEE International Symposium on Quality Electronic Design (ISQED)*, 2015.

- N. B. Gunti, A. Khatri and K. Lingasubramanian, "Realizing a Security Aware Triple Modular Redundancy Scheme for Robust Integrated Circuits", *IEEE International Conference on Very Large Scale Integration VLSI-SOC*, 2014.

- K. Lingasubramanian, A. Calimera, A. Macii, E. Macii, and M. Poncino, "Sub-Row Sleep Transistor Insertion for Concurrent Clock-Gating and Power-Gating", *International Conference on Integrated Circuit and System Design: Power and Timing Modeling, Optimization, and Simulation* (PATMOS), pp. 214 – 225, 2011.
- K. Lingasubramanian and S. Bhanja, "An Error Model to Study the Behavior of Transient Errors in Sequential Circuits", *IEEE International Conference on VLSI Design*, pp. 485 - 490, 2009. *Acceptance rate*: 18.43%, *Citations*: 5
- K. Lingasubramanian and S. Bhanja, "Work in progress - An Education Module on Engineering Ethics Concentrating on Environment-friendly Engineering for Computer Engineers", *IEEE Frontiers in Education Conference*, pp. 1 - 2, 2009. *Citations*: 1
- A. Shareef, K. Lingasubramanian and S. Bhanja, "Selective Redundancy: Evaluation of Temporal Reliability Enhancement Scheme for Nanoelectronic Circuits", *IEEE International Conference on Nanotechnology*, pp. 895 - 898, 2008. *Citations*: 1
- K. Lingasubramanian and S. Bhanja, "Probabilistic Maximum Error Modeling for Unreliable Logic Circuits", *ACM Great Lakes Symposium on VLSI*, pp. 223 - 226, 2007. *Acceptance rate*: 21%, *Citations*: 5
- K. Lingasubramanian and S. Bhanja, "Probabilistic Error Modeling for Sequential Logic", *IEEE International Conference on Nanotechnology*, pp. 616 - 620, 2007. *Citations*: 3
- S. Bhanja, K. Lingasubramanian and N. Ranganathan, "Estimation of Switching Activity in Sequential Circuits using Dynamic Bayesian Networks", *International Conference on VLSI Design*, pp. 586 - 591, 2005. *Acceptance rate*: 28%, *Citations*: 19

Presentations:
- N. B. Gunti and K. Lingasubramanian, "Detection of Hardware Trojans in Integrated Circuits with Power Gating", *91st Annual Meeting of Alabama Academy of Science*, 2014.
- A. Khatri and K. Lingasubramanian, "Probabilistic Modeling Based Hardware Trojan Detection in Integrated Circuits under the Influence of Transient Errors", *91st Annual Meeting of Alabama Academy of Science*, 2014.

Funding:
- "Development of Automated Processing Techniques for Time-Series CGM Data", UAB Diabetes Research Center, PI – K. Lingasubramanian & Co-PI – P. Chandler-Laney, 2014. (*Awarded $47,500*)

MENTORING ACTIVITIES:

Graduate Students:
- Nagendra Babu Gunti (PhD)
- Aman Khatri (Masters)
- Pawan Karki (Masters) (*Graduated*)

Undergraduate Students:
- Zach Cooper
- Aaron McDaniel

- Syed Imam
- Kishan Patel
- Whitney Hill
- Tracy Lin
- Harris Pierce Azerf
- Parth Patel (Honors) (*Graduated*)

TEACHING ACTIVITIES:

Undergraduate Courses:
- EE 312: Electrical Systems (*Spring, Summer & Fall 2014, Spring & Fall 2013, Summer & Fall 2012*)
- EE 485/585: Engineering Operations (*Fall 2014*)

Graduate Courses:
- EE 690/790: ST: Security in VLSI Circuits and Systems (*Fall 2014*)
- EE 690/790: ST: Reliability in VLSI Circuits and Systems (*Fall 2014*)
- EE 690/790: ST: Scalable System Design (*Summer 2014*)
- EE 690/790: ST: High Level VLSI Synthesis (*Spring 2014*)
- EE 690/790: ST: Digital CMOS VLSI Design (*Fall 2013*)
- EE 690: ST: VLSI Synthesis (*Fall 2012*)
- EE 791: Design of Secure VLSI Systems (*Fall 2012*)
- EE 690: ST: Advanced Digital Design (*Summer 2012*)
- EE 691: Low Power VLSI Systems (*Summer 2012*)
- EE 690: ST in Digital Design (*Spring 2012*)

SERVICE ACTIVITIES:

Professional:
- Technical Program Committee member in Design, Automation & Test in Europe (DATE) Conference, 2012.
- Technical Program Committee member in Great Lakes Symposium on VLSI (GLSVLSI), 2014 & 2015.
- Technical Program Committee member in Asia Symposium on Quality Electronic Design (ASQED) China, 2015.
- Technical Program Committee member in GS International Multi-Conference on Science and Technology (GS-MICST), 2014.
- Reviewed papers for the following journals,
  - IEEE Transactions on VLSI Systems.
  - IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems.
  - ACM Journal on Emerging Technologies in Computing Systems.
  - ACM Transactions on Design Automation of Electronic Systems.
  - IET Circuits, Devices and Systems.
- Reviewed papers for the following conferences,

- IEEE International Conference on VLSI Design.
- IEEE International Symposium on Circuits and Systems.
- IEEE Frontiers in Education Conference.

- Member of doctoral dissertation committee for the following,
  - Dr. Dinuka Karunaratne, University of South Florida.
  - Dr. Srinath Rajaram, University of South Florida.

Departmental:
- Director of Electrical and Computer Engineering Honors Program, Department of Electrical and Computer Engineering, University of Alabama at Birmingham.
- Faculty advisor for IEEE Student Branch.
- Member of ABET academic accreditation committee in Department of Electrical and Computer Engineering at University of Alabama at Birmingham.
- Member of Senior Design Committee.
- Faculty volunteer for College of Engineering Open House at University of Alabama at Birmingham.
- Member of doctoral dissertation committee for the following,
  - Mr. Yangguo Li
  - Mr. Qingyun Ma
- Participated in the strategic planning of the department.

University:
- Member of School of Engineering Academic Affairs Committee.
- Affiliated faculty member of the UAB Materials Processing and Applications Development (MPAD) Center.
- Member of UAB Center for Information Assurance and Joint Forensics Research.
- Faculty interviewer for Science and Technology Honors Program at University of Alabama at Birmingham, 2012 – 2014.
- Judge for UAB Graduate Student Research Days competition, 2013.
- Judge for Blazer Best Robotic Competition, 2012-2013.

Community:
- Faculty advisor for the Association of Indian Students (AIS), UAB.

OUTREACH ACTIVITIES:
- Contributed as a teacher in the 2piSTEM program organized by Lawson State Community College, 2014.
- Active participant of the Continuous, Comprehensive and Collaborative (C^3) STEM teaching for select students from George W. Carver High School.

PROFESSIONAL DEVELOPMENT ACTIVITIES:

- Attended proposal writing workshop for NSF CAREER awards, UAB, March 2014.
- Attended the School of Engineering Dean's meeting with the tenure earning faculty, March 2014.
- Attending the meetings of tenure earning faculty held by School of Engineering, UAB.
- Attended NSF Workshop for Aspiring PIs in Cyber-Physical Systems, Washington DC, February 2014.
- Attended NIWeek conference organized by National Instruments, 2014.
- Attended training workshop on Cybersecurity Framework for protecting our Nation's Critical Infrastructure conducted by Alabama Technology Network & Automation Federation, February 2014.
- Attended Computer Science 4 ALL (CS4ALL) Workshop, Auburn, February 2014.
- Conducted seminar presentations along with other departmental research faculties in order to establish collaborative efforts.
- Attended a training session for Canvas educational tool, February 2014.
- Attended a webinar for Research on Education and Learning (REAL) program from NSF, November 2013.

PROFFESIONAL AFFILIATIONS:

- Member of IEEE.