

Anandi Dutta, Ph.D.

Lecturer

Department of Computer Science and Engineering

Texas A&M University

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EDUCATION

- Ph.D., Computer Engineering, University of Louisiana at Lafayette, Lafayette, LA (2016)
- M.S., Computer Engineering, University of Louisiana at Lafayette, Lafayette, LA (2014)
- M.S., Electrical Engineering, Louisiana State University, Baton Rouge, LA (2010)
- B.S., Electrical and Electronic Engineering, American International University-Bangladesh, Dhaka (2007)

EXPERIENCE

Texas A&M University, College Station, TX

- **Lecturer**, August 2016 – Present.
- Courses: Programming Languages (CSCE 314, Haskell, Java), Operating Systems (CSCE 410), Programming 1 (CSCE 110, Python)
- Online Course Development: Mobile Computing (CSCE 489)

University of Louisiana at Lafayette, Lafayette, LA

- Teaching Assistant, August 2014 - July 2016.
- Courses as TA: Data Structure and Software Development (Java), Basic Concepts of Computer Science & Robotics (C++, Python)

University of Louisiana at Lafayette, Lafayette, LA

- Graduate Research Fellow, August 2011 – July 2014.

Louisiana State University, Baton Rouge, LA

- Research Assistant, August 2009 – July 2011

Stamford University Bangladesh, Dhaka, Bangladesh

- Lecturer, April 2007 – June 2009
- Courses: Circuit Theory, Semiconductor Devices, Digital Logic Design, and Digital Electronics

RECOGNITIONS, HONORS, AND AWARDS

- **2016 NSF student travel grant award** by SMARTCOMP 2016 conference
- **2011-2014 Graduate Research Ph.D. Fellowship** by University of Louisiana at Lafayette
- **2014 Scholarship** for attending NEEDS (Nano-Engineered Electronic Devices Simulation) Summer School
- **2010 Jayanti and Suresh Rai Fellowship** by Department of Electrical Engineering, Louisiana State University
- **2007 Vice Chancellor's Award** for the best undergraduate design project: Design and Implementation of Telephone Line Sharing System with Enhanced Privacy

TECHNICAL EXPERTISE

Practical experience in MEMS, Optoelectronics, Etching, Lithography, Oxidation, Deposition, Stitch Bonding, PCB Design and FPGA Design; Working experience in Cleanroom; Languages: C, Java, R, OpenCL, Python, Verilog, Haskell. Operating Systems: Windows, Unix, Software: Matlab, Quartus, HSPICE, Cadence, Qualnet, Xilinx, Modelsim, Synopsys, Android Studio.

SOFT SKILLS

Growth Mindset; Excellent verbal and written communication skills; Team Player

PROFESSIONAL DEGREE

- Self-Driving Car Engineer Nanodegree Program, Udacity (Anticipated: 2019)

RESEARCH EXPERIENCE/PROJECTS

1. **Ph.D. Dissertation:** A Smart Design Framework for a Novel Reconfigurable Multi-Processor Systems-on-Chip (ASREM) Architecture
 - An Android Application, Support Vector Machine-based Machine Learning Algorithm and a Reconfigurable Multi-Processor Systems-on-Chip (MPSoC) architecture has been developed; Altera/Terasic De1SoC board is used.
2. **Master's Thesis:** Development of a Compact Optical System for a Forward-Looking Endoscope
 - Designed a compact optical system with GRIN lens and fiber; implemented a micro-scanner chip using MEMS technology; assembled the probe; developed the packaging and final testing procedure. It was an

- NIH-funded project.
3. Bachelor's Thesis: Design and Implementation of Telephone Line Sharing System with Enhanced Privacy
 - Designed tool to share a telephone line among local people in an area in a secured manner: a receiver, transmitter, timer, processing and switching circuitry were designed and implemented with PCB designing.
 4. Design of a Dynamic Scheduler Memory Controller for SDRAM DDR2
 - Xilinx, Modelsim, and Cadence as design and verification tools.
 5. Design and Implementation of an SRT-2 Carry-Save Divider
 - Xilinx Spartan-3AN board for the implementation of this FPGA project.
 - Verilog and Modelsim for the design and simulation.
 6. Design and Simulation of a Sequential Arithmetic Unit
 - Designed and simulated a Sequential Arithmetic Unit using a Central ALU and a Complex FSM in VHDL. This included synthesis and automatic place and route of the design using Xilinx and Modelsim.
 7. Layout Design and Simulation for an Analog to Information Converter Circuit
 - Designed a circuit in a 0.5 μ m CMOS with operating frequency $f = 200$ MHz.
 8. This project used deep neural networks and convolutional neural networks to classify traffic signs. Specifically, this project trains a model to classify traffic signs from the German Traffic Sign Dataset.
 9. The objective of this project is to clone human driving behavior using a Deep Neural Network. In order to achieve this, the project used a simple Car Simulator. During the training phase, the car was navigated inside the simulator using the keyboard. During the navigation, the simulator records training images and respective steering angles. Those recorded data have been used to train the neural network.
 10. Context Aware Mobile App for Traffic Safety: This project explores the unique social, geographical, economic, transportation safety, crash data and logistic structure of Bangladesh. This project designed a context-aware mobile application to decrease the roadway-crashes in Bangladesh.
 11. Transportation Systems/Engineering Data Mining using Association Rule Mining, Text Mining, Topic Modeling and Sentiment Analysis for several projects.
 12. Scalability Analysis of Reactive Protocols: DSR (Dynamic Source Routing) and AODV-LR (Ad-hoc On-Demand Distance Vector Local Repair)
 13. Worked in projects related with Single Electron Transistor (SET); Functional Connectivity Analysis of fMRI dataset; Plasmonics; Introducing MEMs in Scaffold-based Tissue Engineering.

PEER-REVIEWED PUBLICATIONS

1. Das, S., **A. Dutta**, K. Dixon, L. Minjares-Kyle, and G. Gillette. [Using Deep Learning in Severity Analysis of At-Fault Motorcycle Rider Crashes](#). *Transportation Research Record: Journal of the Transportation Research Board*, 2018 .
2. Das, S., A. Mudgal, **A. Dutta**, and S. Geedipally. [Vehicle Consumer Complaint Reports Involving Severe Incidents: Mining Large Contingency Tables](#). *Transportation Research Record: Journal of the Transportation Research Board*, 2018.
3. Das, S., **A. Dutta**, M. Jalayer, A. Bibeka, and L. Wu. [Factors influencing the patterns of wrong-way driving crashes on freeway exit ramps and median crossovers: exploration using 'Eclat' association rules to promote safety](#). *International Journal of Transportation Science and Technology*, Vol. 7 Iss. 2, pp. 114-123.
4. Das, S., L. Minjares-Kyle, K. Dixon, A. Palanisamy, and **A. Dutta**. [#TRBAM: Exploring Knowledge Sharing, Research Trends, and Networks by Social Media Mining](#). *Transportation Research Record: Journal of the Transportation Research Board*, 2018.
5. Das, S., **A. Dutta**, R. Avelar, K. Dixon, X. Sun, and M. Jalayer. [Supervised Association Rules Mining on Pedestrian Crashes in Urban Areas: Identifying Patterns for Appropriate Countermeasures](#). *International Journal of Urban Sciences*. <https://doi.org/10.1080/12265934.2018.1431146>
6. **A Dutta**, M Bayoumi, " A Novel Architecture and Task-Scheduling Algorithm for Reconfigurable Multi-Processor Systems-on-Chip," IEEE Embedded Systems Letters, [under review]
7. **A Dutta**, M Bayoumi, " ASREM: A smart Framework for Reconfigurable MPSoC Design," IEEE Transactions on Emerging Topics in Computing, [under review]
8. **A Dutta**, M Bayoumi, "Introducing a Smart Design Framework for a Novel Reconfigurable Multi-Processor Systems-on-Chip Architecture," Proceedings in SmartComp2016 May. 18-20, 2016, St. Louis, Missouri.
9. **A Dutta**, M Bayoumi, "FinFET based SRAM Design: A Survey on Device, Circuit, and Technology Issues," Proceedings in ICECS2014 Dec. 7-10, 2014, Marseille, France.
10. Das, S., K. Dixon, X. Sun, **A. Dutta**, and M. Zupancich, "Trends in Transportation Research: Exploring Content Analysis in Topics", *Transportation Research Record: Journal of the Transportation Research Board*, No. 2614, 2017, pp. 27-38.
11. Das, S., X. Sun, and **A. Dutta**, "Text Mining and Topic Modeling of Compendiums of Papers from

[Transportation Research Board Annual Meetings](#)”, Transportation Research Record: Journal of the Transportation Research Board, No. 2552, 2016, pp. 48–56.

12. Das, S., X. Sun, and **A. Dutta**, “[Investigating User Ridership Sentiments for Bike Sharing Programs](#)”, Journal of Transportation Technologies, Vol. 5 No. 2, pp. 69-75, 2015.

CONFERENCE PRESENTATIONS

1. **A Dutta**, “Public Perception on Autonomous Vehicles: Understanding patterns from YouTube Videos”, Grace Hopper Celebration of Women in Computing, September 26-28, 2018, Houston, TX.
2. **A Dutta**, “Introducing a Novel Smart Design Framework for a Reconfigurable Multi-Processor Systems-on-Chip (MPSoC) Architecture,” Grace Hopper Celebration of Women in Computing, ACM Student Research Competition, October 19-21, 2016, Houston, TX.
3. Das, S., and **A. Dutta**. Text mining on 100 years of Air Crash Narratives: Key Findings. *The 96th Transportation Research Board Annual Meeting, Washington D.C., January 11, 2017.*
4. Das, S., and **A. Dutta**. Visualization Lightning Talk: Visual Analytics by using Web GIS Tools in Transportation Decision Making. *The 96th Transportation Research Board Annual Meeting, Washington D.C., January 11, 2017.*
5. **A. Dutta**, and S. Das. Association Rules Mining on the Ridership Data of a Bike Sharing Program. *55th Annual Transportation Research Forum, San Jose, CA, March 14, 2014.*

PROPOSALS

1. Das, S. (PI), K. Womak, and **A. Dutta**. Data Mining on TxDOT Social Media Feeds: Understanding Texans’ view on TxDOT Safety Campaigns. *Submitted to TxDOT, 2017. Budget: \$95,000.00. (not awarded).*
2. Das, S. (PI), **A. Dutta**, B. Dadashova, E. Shipp, and M. Le. Develop a Deep Learning Tool to analyze Video and Naturalistic Driving Data related to Safety-Critical Events. *Submitted to Safe-D University Transportation Center*