Jyotikrishna Dass

1501 Northpoint Ln
College Station
TX 77840, USA

Email: dass.jyotikrishna@tamu.edu
Web: http://people.tamu.edu/~jyoti1991/

EDUCATION

Texas A&M University (TAMU), College Station, TX — Expected: May 2020
PhD. candidate, Computer Science and Engineering,
Dissertation: *Distributed Training for Large-Scale Machine Learning Problems*
Advisor: Prof. Rabi Mahapatra
GPA: 3.80

Indian Institute of Technology (IIT), Guwahati, Assam — May 2014
B.Tech, Electronics and Communication Engineering
Minors in Computer Science and Engineering
GPA: 8.42/10

RESEARCH INTERESTS

Machine Learning, Parallel and Distributed Computing, Hardware accelerators

RESEARCH EXPERIENCE

Texas A&M University — Aug 2014-Present
Dissertation Project
Distributed Training for Large-Scale Machine Learning Problems

- Designed a relaxed synchronization approach for solving parallel quadratic programming problems
- Formulated analytic solution for optimal synchronization period ensuring guaranteed convergence, and numerical stability
- Devised a fast and memory-efficient framework to train large-scale Support Vector Machine problem in parallel
- Developed a communication-efficient model for scaling large-scale Support Vector Machine in a distributed computing setup
- Synthesized a multiple FPGA-based design for energy-efficient and distributed training of Support Vector Machine
- Presently working on a distributed framework for incremental earning in Kernel Ridge Regression
- Currently investigating distributed training of deep learning models on low-power and memory-constrained end devices

PUBLICATIONS

- **J. Dass**, Y Narawane, R. N. Mahapatra and V. Sarin, "FPGA-based Distributed Edge Training of SVM,", in Proceedings of the 2019 ACM/SIGDA 27^{th} International Symposium on Field Programmable Gate Arrays (**FPGA**), Seaside, CA. doi: http://doi.acm.org/10.1145/3289602.3293954
- **J. Dass**, V. Sarin and R. N. Mahapatra, "Fast and Communication-Efficient Algorithm for Distributed Support Vector Machine Training," in IEEE Transactions on Parallel and Distributed Systems (**TPDS**). doi: 10.1109/TPDS.2018.2879950
- D. Dang, **J. Dass** and R. Mahapatra, "ConvLight: A Convolutional Accelerator with Memristor Integrated Photonic Computing," 2017 IEEE 24^{th} International Conference on High Performance Computing (**HiPC**), Jaipur, 2017, pp. 114-123.
- **J. Dass**, V. N. S. P. Sakuru, V. Sarin and R. N. Mahapatra, "Distributed QR Decomposition Framework for Training Support Vector Machines," 2017 IEEE 37^{th} International Conference on Distributed Computing Systems (**ICDCS**), Atlanta, GA, 2017, pp. 753-763.

- K. Lee, R. Bhattacharya, **J. Dass**, V. N. S. P. Sakuru and R. N. Mahapatra, "A Relaxed Synchronization Approach for Solving Parallel Quadratic Programming Problems with Guaranteed Convergence," 2016 IEEE International Parallel and Distributed Processing Symposium (**IPDPS**), Chicago, IL, 2016, pp. 182-191.
- **J. Dass**, M. Sharma, E. Hassan and H. Ghosh, "A density based method for automatic hairstyle discovery and recognition," 2013 Fourth National Conference on Computer Vision, Pattern Recognition, Image Processing and Graphics (**NCVPRIPG**), Jodhpur, 2013, pp. 1-4.

PATENTS

"System and Method for Identifying a Hairstyle of a Person", *India 3955/MUM/2013* (applied)

TEACHING EXPERIENCE

Department of CSE, TAMU Aug 2018 - Dec 2018
Graduate Assistant Lecturer
CSCE 312: Computer Organization

- Appointed as instructor of record for a class of 35 undergraduate students from diverse engineering majors including international exchange students
- Taught an introductory course providing insights into the fundamentals of organization and structure of computer systems
- Responsible for classroom teaching, creating lecture slides, assignments, projects, and exams, holding weekly office hours to assist students in their learning, and finally assigning grades at the end of term
- Supervised a team of one teaching assistant and three peer teachers for effective learning and assistance during weekly lab projects
- Received post-course evaluation rating of 4.6/5 from the students

Department of CSE, TAMU Aug 2014 - Present
Graduate Assistant Teaching
Held multiple appointments with responsibilities that include teaching lab-related concepts, creating programming assignments and exams, helping around 1000 students with their queries during lab and office hours, and maintaining a conducive and inclusive learning environment in labs with a team of 50+ peer teachers

- CSCE 111: Introduction to Computer Science and Programming (JAVA)
  Instructor: Dr. Joseph Hurley
  Summer 2015, Spring 2016
- CSCE 121: Introduction to Program Design and Concepts (C++)
  Instructor: Dr. Michael Quinn
  Spring 2017
- CSCE 206: Structured Programming in C++
  Instructor: Dr. Joseph Hurley
  Fall 2014, Spring 2015, Summer 2015, Fall 2015, Summer 2016, Fall 2016
- CSCE 312: Computer Organization
  Instructor: Dr. Aakash Tyagi
  Summer 2016, Fall 2017, Spring 2018, Spring 2019

AWARDS & HONORS

- ACM FPGA 2019 Travel Grant, Seaside, CA
- Teaching Assistant Excellence Award 2018, Department of CSE, TAMU
- Travel Grant 2017, Department of CSE, TAMU
- IEEE ICDCS 2017 Travel Grant (NSF sponsored), Atlanta, GA
- IEEE IPDPS 2016 PhD Forum Travel Grant (NSF sponsored), Chicago, IL
- IEEE NCVPRIPG 2013 Travel Grant (TCS sponsored), Jodhpur, India
- All India Rank: 2076, IIT-JEE 2010 (top 0.41% of 500,000 applicants)

- All India Rank: 1246, AIEEE 2010 (top 0.12% of 1 million applicants)
- Gold Medal for Academic Excellence 2009, DPS Vasant Kunj, Delhi, India

SKILLS

Programming: C, C++, MATLAB, R, Python, Java, HDL
Applications: Vim, MPI, OpenCV, LaTeX
Operating Systems: Linux, Mac OSX, Windows
Languages: English (proficiency), Hindi (native), Oriya (familiar), Bengali (familiar), French (familiar)

PROFESSIONAL EXPERIENCE

Transaction Risk Management Systems,
Amazon, Seattle, WA
Applied Scientist Intern — Jun 2017-Aug 2017
Customer Behavioral Data and Modeling

- Applied machine learning methods to mouse tracking data to evaluate customer risk and identify account compromise
- Developed scripting code to collect and structure real data set with millions of samples, created R code for parsing and feature extraction from time series data and Python code for applying machine learning techniques

Multimedia, Graphics and Robotics Group, Innovation Labs,
TCS, Gurugram, India
Research Intern — May 2013- Jul 2013
Automatic Hairstyle Discovery and Recognition

- Developed a novel method for automatic discovery and recognition of hairstyles in a collection of images
- Worked with OpenCV library for image processing and machine learning
- Improved the accuracy of TCS fashion recommendation system from 40% to 76%.

PRESENTATIONS

- Poster presentation at ACM FPGA 2019, Seaside, CA, USA
- Oral presentation on summer internship at Amazon 2017, Seattle, WA, USA
- Oral presentation at IEEE ICDCS 2017, Atlanta, GA, USA
- Poster presentation at IEEE IPDPS 2016 PhD forum, Chicago, IL, USA
- Poster presentation at CSE-IAP 2017, TAMU, College Station, TX, USA

SERVICES

Reviewer

- ACM GLSVLSI 2016
- NIPS 2016

Leadership

- Vice President of Advocacy (2015), Student Adviser (2016)
  Indian Graduate Student Association, TAMU

Miscellaneous

- IEEE Student Member
- Judge, Student Research Week (SRW), TAMU, 2015
- Volunteer, The Big Event, TAMU, 2015, 2016,

REFERENCES

Dr. Rabi Mahapatra
Professor, Dept. of Computer Science & Engineering
HRBB 520B, Texas A&M University, College Station
rabi@tamu.edu
Phone: (979)845 – 5787

Dr. Aakash Tyagi
Professor of Practice, Dept. of Computer Science & Engineering
HRBB 515A, Texas A&M University, College Station
tyagi@tamu.edu
Phone: (979)845 – 5480