SAPTARSHI DAS

Address: 1175 Arbor Drive, APT G,
East Lansing, MI – 48823.
Mobile: (517)-643-0469

Email: dassapta@egr.msu.edu
Webpage: www.egr.msu.edu/~dassapta
LinkedIn: http://www.linkedin.com/in/dassap

PROFESSIONAL OBJECTIVE

ECE Ph.D. researcher looking for **Internship / Full-Time** opportunities (**Sr. Software Engineer / Research Scientist / Applied Systems Engineer / Machine Learning Engineer / Data Scientist**) starting **Summer 2019**.

RESEARCH INTERESTS

Wireless Networking, Embedded Systems, **Energy-Efficient** and **Energy-Harvesting**-Aware **Network Protocol Design** (Medium Access Control, Routing), **Machine Learning, Neural Networks** (Deep Learning, Spiking Neurons) for **Prediction** / **Pattern Recognition**, **Evolutionary Multi-Objective Optimization**, Autonomous / Continuous **Structural Health Monitoring**

EDUCATION

Michigan State University (MSU), East Lansing, MI, USA Aug 2013 – Present
Ph.D. Student, Electrical and Computer Engineering **GPA: 3.73 / 4.0**
Advisor: **Prof. Subir K. Biswas** (**Tentative Graduation:**
Thesis Title: ***"Energy-Efficient and Harvesting-Aware Networking Protocol Design for Energy-Harvesting-Powered Structural Health Monitoring Systems"*** ***May 2019)***

Heritage Institute of Technology (HITK), Kolkata, WB, India 2007 - 2011
Bachelor of Technology, Electronics and Communication Engineering **GPA: 8.88 / 10.0**
Undergrad Project: An Efficient Adaptive Color Demosaicing Algorithm

TECHNICAL SKILLS / PLATFORM EXPERIENCE

Languages: **C / C++ / Java / Python / Scala** (*General Purpose*), **MATLAB / R** (*Computational*), Awk / **Bash** / Groovy / **JavaScript** (*Scripting*), NesC / **Arduino** / **Assembly** (*Embedded Systems*)
Platforms: **Keras** / **TensorFlow** / Torch / **Google Cloud** (*Machine Learning*), Nest (*Spiking Neural Nets*), **NS3** / ONE (*Network Simulation*), Avida / **NSGA** (*Genetic Algorithms*), Android SDK / **AngularJS** / HTML5 / CSS3 (*Mobile / Web App Design*), **Blender** (*3D Printing / Design*), D3.js (*Data Visualization*), OracleDB / **SQLite** / MongoDB / **PL-SQL** / **Firebase** (*Database Systems*), **Spark** / **Pandas** (*Big Data*)

WORK EXPERIENCE

NETWORKED EMBEDDED AND WIRELESS SYSTEMS (NEEWS) LAB, MSU (East Lansing, USA) Aug 2013 – Present
Graduate Research Assistant
Worked in various projects funded by NASA, NSF, MSU Foundation / SPG etc. involving design / implementation of networked, embedded sensing devices / systems for varied applications and energy-efficient network communication protocols / architectures for these, in collaboration with diverse teams

SELECTED PROJECTS

1) ***Energy-Aware Through-Substrate Ultrasonic Pulse Communication for Structural Health Monitoring Systems*** – Novel energy-efficient communication protocol (pulse time-based encoding) and structural anomaly detection (binary event data-based) paradigms. System architecture and protocols development, event-driven simulation (C++) and evaluation, hardware prototype.
2) ***Energy-Efficient Event Pattern Recognition using Spiking Neuron-Based Learning and Pulse Networking*** – Novel learning and networking paradigm. Brain-inspired Spiking Neuron-based (Nest simulator) Learning Adaption with Pulse Networking.
3) ***Wearable Networked Multi-Modal Sensing System for Cost-Effective and Privacy-Friendly Detection and Measurement of Meaningful Behavioural Interactions in Limited Space Environments (Space Station / Space Settlement analogues for team cohesion studies – NASA HERA / HI-SEAS projects, Early childhood classrooms for detection of early childhood social development and autism***

indicators – MSU Child Development Lab) – Novel System Architecture and Application Paradigm. Software / Hardware (Embedded) dev, 3D Case Design (Blender), Realtime GUI (Visual Basic).

4) ***Ultra-Energy-Efficient Solar-Harvesting-Powered Distributed Wireless Sensing System for Greenhouse Environment Monitoring and Control*** – Novel communication paradigm (pulse interval encoding), completely maintenance-free operation, end-to-end system dev (greenhouse to cloud), Long Short-Term Memory (LSTM) Neural Network-based prediction of harvesting availability for communication protocol adaptation, Realtime GUI (Firebase / AngularJS)

TECHNICAL EXPOSURE

Substantial experience in systems / architecture / communication protocol design and programming on various software (full-stack) and hardware (embedded devices such as Mica2, IRIS, Cricket, Arduino Uno / Yun / Pro Mini etc.) platforms.

RESEARCH OUTPUT

14 peer-reviewed publications (59 citations, h-index: 5, i-10 index: 2, Google Scholar: *https://scholar.google.com/citations?user=BL1ZY88AAAAJ*), 3 conference presentations (1 International), 1 U.S. Patent (granted 2018), Multiple Research / Travel Fellowships (Domestic / International) received

INFOSYS LTD. (Chennai / Bangalore / Mysore, India) Aug 2011 – Aug 2013

Systems Engineer (2011-13) and **Systems Engineer Trainee** (2011)

Worked as a developer in the Financial Services (banking) domain, delivering projects for a Big-4 U.S. Bank

PROJECTS

1) ***Automatic Check Image Processing and Handling***
2) ***Customer Information, Risk and Offers Management***

Involved in all phases of the software development life cycle (design, coding, testing, maintenance) across multiple projects

Handled the responsibilities of Configuration Controller for a multi-city project team (20-30 members)

TECHNICAL EXPOSURE

Extensive full-stack development experience on the Java platform, Oracle / IBM Database systems, SOAP / REST Web Services etc. and wide exposure to a range of established programming frameworks, tools and design patterns

SELECTED PUBLICATIONS / PATENTS

1) **S. Das**, H. Salehi, Y. Shi, S. Chakrabartty, R. Burgueño, and S. Biswas**, "Towards Packet-less Ultrasonic Sensor Networks for Energy-harvesting Structures"**, **Computer Communications Journal, 2016**
2) H. Salehi, **S. Das**, S. Chakrabartty, S. Biswas, and R. Burgueño**, "Structural damage identification using image-based pattern recognition on event-based binary data generated from self-powered sensor networks", Structural Control and Health Monitoring Journal, 2017**
3) S. Biswas, D. Feng, F. H. Memar, **S. Das**, "**Method and Device for Transmitting Data using Inter-Pulse Interval Modulation Technique**", **U.S. Patent, US 10051663 B2, 2018**

SELECTED PH.D. COURSEWORK

Neural Networks and Deep Learning, Advanced Computer Architecture, Advanced Operating Systems, Stochastic Processes and Applications, Evolutionary Computation, Evolutionary Multi-Criterion Optimization and Decision-Making, Design and Theory of Algorithms, Algorithmic Graph Theory

LEADERSHIP / AFFILIATIONS

Secretary for League of Electrical Engineering Graduate Students (LEEGS) 2014 - 2016

Organized monthly meetings, peer-help sessions, technical workshops and social gatherings to help the ECE community in MSU and fostering collaboration and camaraderie among them

OTHER INTERESTS

Amateur Astronomy, Cycling, Photography, Soccer, Open Source Software Development and Advocacy