

## DEBANJANA NAYAK

180 Waterview Drive, Apt. 503, Oak Ridge, TN 37830, USA

Ph: (919)527-8713 | Email: [dnayak@ncsu.edu](mailto:dnayak@ncsu.edu), [nayakd@ornl.gov](mailto:nayakd@ornl.gov)

### OBJECTIVE

---

Looking for stimulating opportunities to perform research in the field of Machine Learning, Data Science & Analytics, which would help develop my analytical skills and the ability to conduct prolific research, necessary for a future research career.

### EDUCATION

---

NC State University, USA	PhD in Computer Science	GPA: 3.963	Fall 2015 - Present
NC State University, USA	MS in Computer Science	GPA: 4.00	Fall 2013 - Summer 2015
West Bengal University of Technology, INDIA	B.Tech. in Electronics & Communication Engineering	GPA: 8.69	August 2006 - July 2010

### HONORS / AWARDS

---

- Member of The Honor Society of Phi Kappa Phi: Spring 2015 - Present
- NC State University College of Engineering Graduate Merit Award: 2015-2016
- Computer Science Masters Research Award: Spring 2016
- NC State University College of Engineering Mentored Teaching Assistantship Award: Fall 2017
- Team Award for Research Accomplishment in the Science and Technology category from UT-Battelle as a member of the winning ARES team from the Oak Ridge National Lab: Fall 2019

### RESEARCH EXPERIENCE

---

- 2018 - Current    **Research Intern**, National Security Emerging Technologies, Oak Ridge National Laboratory, Oak Ridge, TN, USA.
1. Mitigation of cloud shadows in satellite imagery through GAN-based machine-learning approaches  
Mentor: Dr. David Hughes & the Remote Sensing Group
  2. Detection of anomalies in the co-ordinates estimated by various navigation algorithms and an approximation of the corresponding ground truth  
Mentor: Dr. David Page and the Resilient Communications and Autonomous Group
- 2015 - Current    **PhD Student**, Dept. of Computer Science, NC State University, Raleigh, NC, USA.
1. Detection of anomalies in the multivariate time-series data from various meteorological sensors through machine-learning
  2. Automated real-time anomaly detection of temperature sensors through machine-learning
- Advisor: Dr. Harry G. Perros
- 2014-2015        **MS Student**, Dept. of Computer Science, NC State University, Raleigh, NC, USA.  
Thesis: An Evaluation of Video Traffic Models for 3D Video  
Advisor: Dr. Harry G. Perros

## TEACHING EXPERIENCE

---

Graduate Teaching Assistant

Dept. of Computer Science,  
NC State University, Raleigh, NC

Summer 2015 – Spring 2018

### Courses:

Cloud Computing (Spring 2017 & 2018), Computer and Network Security (Spring 2016), Networking Services: QoS, Signaling, Processes (Summer & Fall 2015, Summer 2017), Internet of Things Analytics (Fall 2016 & 2017)

### Responsibilities:

- Deliver a range of teaching and assessment activities for both undergraduate and graduate level courses
- Support with faculty research projects; engage in literature searches
- Involved in the development of new material for department courses
- Contribute to the development of appropriate teaching materials to ensure content and methods of delivery meet learning objectives
- Participate in the assessment process using a variety of methods and techniques and provide effective, timely and appropriate feedback to students to support their learning
- Supervise lab/project work advising on skills, methods and techniques to assist transfer of knowledge
- Have experience in managing distance-education courses and teaching remote students

## INDUSTRY EXPERIENCE

---

Technical Associate

Tech Mahindra, Pune, INDIA

Nov 2010 – Jan 2013

### Projects:

- SFW OR FLOW DEV: (Client - British Telecom; Domain - Service Fulfillment)  
OR Flow enables the automation of the provisioning process of the physical connection of telephone/broadband for a customer for different BT products/services.
- COMET: (Client - AT&T; Domain – Service Fulfillment)  
COMET (Customer Order Management and Engagement Tool) provides a solution that automates the customer on-boarding process to the maximum extent possible for AT&T Commercial Connectivity Services, which helps the enterprise connect their WAN with AT&T cellular network in order to keep their mobile workforce connected to the enterprise network.

**Role:** Application Developer

### Responsibilities:

- Leading and developing Customer Requirements and holding the responsibility up to their delivery
- Collaborating among different team members for different issues and effectively resolving those
- Analyzing the defects and fixing them
- Seeing myself as a team player and putting forward my views to enhance team efficiency
- Training new team members.

**Jobs Done:** Coding And Development, Unit Testing

**Awards Received:** PAT ON THE BACK Award in FY 11-12 Q4 for effective coding practices, before time delivery of code and quick resolution of defects.

## LANGUAGES AND TECHNOLOGIES

---

**Languages:** C, Python (PyTorch), Julia, Java, SQL, PL/SQL, XML, HTML, BPEL, VHDL  
**OS:** Windows, Linux, Unix, DOS  
**Software:** Oracle 9i/10g, AVOS, OPNET, Wireshark, MATLAB, AutoCAD, PSpice, HPQC, FLOW Tools, OMNET++, INETMANET, SUMO, VEINS  
**Concepts:** Application Development, Unit Testing, Agile Development Cycle  
**Domain:** SOA, BPM, Service Fulfillment & Assurance

## RESEARCH INTERESTS

---

- Hidden Markov Models – Discrete and Continuous HMMs (Gaussian, Mixture of Gaussians, Gamma, AR, VAR, etc.); HMMs with Explicit State Duration Density
- Regime-Switching Models
- Regressive Models, especially Auto-Regressive (AR) & Vector Auto-Regressive (VAR) Models
- Clustering & Classification techniques, especially Support Vector Machines
- Neural Networks, especially Autoencoders and Generative Adversarial Networks (GAN)
- Time Series Analysis, Forecasting and Anomaly/Outlier Detection
- Machine Learning in Image Analysis and Computer Vision
- Queueing Theory and Performance Modelling

## PUBLICATIONS

---

- [1] Debanjana Nayak, and Harry Perros. 2020. Automated Real-Time Anomaly Detection of Temperature Sensors through Machine-Learning. International Journal of Sensor Networks (accepted).
- [2] Savera Tanwir, Debanjana Nayak, and Harry G. Perros. 2016. Modeling 3D video traffic using a Markov modulated gamma process. 2016 International Conference on Computing, Networking and Communications (ICNC), Kauai, HI, USA, pp. 1-6.

## PRESENTATIONS & CONFERENCES

---

- 2016 [1] Attended 2016 Grace Hopper Celebration of Women in Computing, Houston, TX, USA.  
[2] Presented a poster, "Modeling 3D Video Traffic", at 2016 CRA-W Grad Cohort Workshop, San Diego, CA, USA.

## TRAINING & WORKSHOPS

---

- 2009 Completed the training program, "Project Based Training on Microcontrollers", at Govt. of India, Ministry of Communications and IT, Dept. of Information Technology, STQC Directorate, CETE (Centre for Electronics Test Engineering), Kolkata, West Bengal, India.
- 2008 Completed the part-time certificate course, "Oracle 9i with JAVA", at DOEACC Society, Kolkata, West Bengal, India.
- 2007 Completed the summer course, "Development & Testing of Electronic Systems", at Dept. of Electronics & Communication Engineering, Heritage Institute of Technology, Kolkata, West Bengal, India.