

Shah Mahdi Hasan

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I maintain my own math/tech blog at smhasan.com/notes

Education

- **University of Newcastle** **Newcastle, NSW**
November 2017–ongoing
 - *PhD in Electrical Engineering & Computation*
UNIPRS & UNRS Scholar
- **Bangladesh University of Engineering & Technology** **Dhaka, Bangladesh**
2010–2015
 - *B.Sc (Hons) in Electrical & Electronic Engineering*
First Class
- **Dhaka College** **Dhaka, Bangladesh**
2007–2009
 - *Higher Secondary School Certificate*
GPA 5.00/5.00 with Talent Pool Scholarship

Awards and Accomplishments

- **UNIPRS 2017 & UNRS 50:50 Scholarship:** Awarded by *University of Newcastle Research Division* to support PhD research
- **Runner Up:** Awarded in *Cadence Xtensa Design Contest, India 2015* for designing Adaptive Beamformer using Microphone Array
- **Best Paper Award:** *IEEE ComSoc Student Paper Contest 2014* for my debut publication
- **2nd Runner Up:** at *Make-a-Thon Bangladesh 2014* for the prototype of CycleSafe device

Expertise

- **Coding:** 5 yrs+ experience in Python, R, MATLAB, SQL. Experienced in Julia, C++
- **Framework:** TensorFlow, PyTorch, XGBoost, Statsmodels, Shiny, CVX, YALMIP
- **OS and Scripting:** Ubuntu, REDHAT (for Grid/Distributed Computing), BASH
- **Communication:** PTE Score: 83/90 (Speaking:90, Reading:87, Writing:79, Listening:78)

Research

- Submitted/Under Review.....
- **SM. Hasan**, K. Mahata, M. M. Hyder, “*Multi-user Detection in Uplink Grant-Free NOMA with Dynamic Random Access using Sinusoidal Sequence*,” 5G and Beyond, Taylor and Francis, 2020
 - **SM. Hasan**, K. Mahata, M. M. Hyder, “*Fast Uplink Grant-Free NOMA with Sinusoidal Spreading Sequences*,” IEEE Transactions on Communications, 2020

Published.....

- **SM. Hasan**, K. Mahata, M. M. Hyder, "Sparse Code Multiple Access Codebook Design using Equiangular Tight Frame," IEEE International Conference on Communication, 2020, Dublin, Ireland
- **SM. Hasan**, K. Mahata, M. M. Hyder, "Joint Uplink SCMA Codebook Design in Correlated Fading Channels," Physical Communication, Elsevier, 2020
- **SM. Hasan**, M. A. Hayat, M. F. Hossain, "On Downlink SINR and Outage Probability of Stochastic Geometry Based LTE Cellular Networks with Multi-Class Services," 18th International Conference on Computer and Information Technology (ICCIT) 2015, Dhaka
- **SM. Hasan**, et.al., "Robust Microphone Array System Using Adaptive Beamforming," 18th International Conference on Computer and Information Technology (ICCIT) 2015, Dhaka

Employment History

Industrial R&D.....

- **Grameenphone Ltd.** **Khulna, Bangladesh**
Digital Ambassador, KB Circle *July 2016-May 2017*
 - Portable Generator (PG) management using Agglomerative Clustering with Stochastic Gradient Descent
 - PG distribution policy design under network outage and revenue constraints using PSO
 - Faster faulty transmission node detection using Graph Analytics

Industrial O&M.....

- **Grameenphone Ltd.** **Dhaka, Bangladesh**
Executive, Digital Channels *June 2017-October 2017*
 - Supervise/Maintenance of nationwide eRetail operation for 7K+ retailers
 - Geo-classification and mapping using serving BTS (cell) for precision reporting
 - Vendor management, reporting automation for eRetail & Flexiplan App
 - Establishing DB redundancy, Varnish Caching and CMS for Grameenphone Corporate Website
- **Grameenphone Ltd.** **Jessore, Bangladesh**
System Engineer, Regional Operations *October 2015-June 2016*
 - Supervision of 1100+ BTS serving a subscriber base of 4 million+
 - Provided data-driven solution for various network metric loss (IPPM, MPD, Cross-channel Interference)
 - Employed bandwidth optimization schemes (XPIC, LPC)
 - Employed microwave link protection schemes (ERP, RTA, 1+1 Hot Standby)
 - Developer of multiple automation tools including: TX MASTER, SUB BAND TRACER
 - Coordinator, Core Optimization Team, Jessore Switch

Teaching Experience.....

- **University of Newcastle** **Newcastle, NSW**
Casual Academic *Feb 2019-Current*
 - Casual Academic at School of Electrical Engineering and Computation
 - Casual Academic at School of Mathematical and Physical Science
 - Casual Academic at Wollotuka Institute