# Tahmidul Islam


- **Address:** 301 S Bull St Apt #E, Columbia, SC, 29205
- **Email:** tahmidstat@gmail.com • **Phone:** 4128775255
- **Linkedin:** https://www.linkedin.com/in/tahmidul • **Web:** https://tahmid-usc.github.io


## Interests

Machine Learning, Functional Data, Longitudinal Data, Bayesian Analysis, Mixed Effect Model, Gaussian Process

## Education

**University of South Carolina** • Columbia, SC — August 2016 – 2021
*Doctor of Philosophy* • *Statistics*

**University of Dhaka** • Dhaka, Bangladesh — August 2014 – March 2016
*Master of Science* • *Statistics*

**University of Dhaka** • Dhaka, Bangladesh — January 2010 – August 2014
*Bachelor of Science* • *Statistics*

## Work Experience

**Graduate Assistant** — University of South Carolina — August 2016 – Present
Columbia, SC

- Lecture and lab instructor, Department of Statistics
  - Duties: Prepare lecture, lab and examination materials, deliver lecture, manage course using Blackboard and Pearson's MyLab & Mastering, train new graduate assistants
  - Taught courses: STAT 201: Elementary Statistics (72 students each semester) and STAT 509: Statistics for Engineers
- Research assistant, Department of Biostatistics and Epidemiology, Arnold School of Public Health
  - Investigated association between small for gestation age and infant mortality in USA
  - Acquired birth and death record data from US vital statistics system
  - Applied GAM and computed confidence interval for the adjusted relative risk using posterior simulation

**Statistical Officer** – International Centre for Diarrhoeal Disease Research, Bangladesh — Sep 2015 – Jan 2016
Dhaka, Bangladesh

- Gathered, maintained, cleaned and analyzed health surveillance system data
- Consulted public health researchers with research design, sample size calculation and statistical methodologies

## Projects

**Bayesian framework for analyzing sparse functional data using Gaussian process** – Ph.D. Dissertation

- Developed unified Bayesian framework for modeling sparse and regular functional data and obtained an estimate of the mean function with uncertainty quantification
- Derived classification algorithm for sparse function data
- Successfully applied to spinal bone mineral density (longitudinal) data, temporal gene expression data
- Derived approximation free efficient computation for non-sparse (regular) functional data

**Computationally efficient Gaussian process regression for data with replications**

- Derived algorithm to perform GP computation on unique grid points only, reducing computational complexity for replicated data

**Spatial analysis of COVID-19 cases in the UK**

- Performed geographically weighted regression (GWR) to model association between COVID rate and racial/ethnic minority (BAME) concentration

**COVID-19 cases and deaths projection using Gaussian process regression with Richard's curve prior**

- Used GP regression with pre-specified mean function to project the cumulative number of confirmed cases and deaths in the US (by state) (`https://tahmid-usc.github.io/covidGP`)

**Forecast electricity power load in Texas with TBATS model**
**Predict breast cancer from the digitized image of fine needle aspirate of breast mass using LASSO logistic regression**
**Frailty and GLMM for analyzing under-5 mortality and child malnutrition in Bangladesh**
**Kaggle competitions**

- Otto Group Product Classification Challenge
- Predict annual restaurant sales based on objective measurements
- Handwritten Digit Recognition

## Technical Skills

- Programming languages and Packages: R, SAS, stata, SPSS, Python, SQL, Git, Bash, Markdown, SLURM (High Performance Computing)
- Other computer experience: Latex, MS Office Suite

## Publications/Conferences

- Islam, T., Chakraborty, P., Grego, J., and Lynch, J. (2020). A Bayesian Nonparametric Model for Sparse Functional Data Using Gaussian Process Priors. *Computational Statistics and Data Analysis (submitted)*
- Islam, T., Chakraborty, P., Lynch, J., and Grego, J. (2019). Bayesian Smoothing and Classification of Sparse Functional Data Using Gaussian Process. Poster session (Bayesian Methods) at the JSM, Denver, CO
- Islam, T. (2019). Learning Images with Gaussian Process Regression and Application to Classification. Poster session (Machine Learning) at the ENAR, Philadelphia, PA
- Islam, T., Rabbani, M., and Bari, W. (2016). Analyzing child malnutrition in Bangladesh: Generalized linear mixed model approach. *Dhaka University Journal of Science*

## Awards

- Outstanding Graduate Assistant Award 2018
- Outstanding First-Year Graduate Student Award 2017
- National Science and Technology Fellowship; Bangladesh Government

## Professional Society Memberships

- American Statistical Association (ASA)
- International Biometric Society (ENAR)

## Graduate Courses

- Probability theory I & II
- Mathematical Statistics I & II
- Data Analysis I & II
- Stochastic Processes
- Advanced Inference
- Nonparametric Inference
- Large Sample Theory
- Categorical Data Analysis
- Computing with R and SAS
- Linear Models
- Biostatistics
- Artificial Intelligence
- Statistical Consulting
- Econometrics