Nabeel Abdur Rehman

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Education

- **New York University** — New York, NY
  PhD in Computer Science — *2015 – Present*
- **Lahore University of Management Sciences (LUMS)** — Lahore, Pakistan
  Bachelor of Science in Electrical Engineering — *2009 – 2013*

Research Experience

- **New York University** — New York, NY
  Graduate Research Assistant — *September 2015 – Present*
  - **Filling in the Timeline**: A stochastic framework for predicting individual level mobility timelines using sparse location data from social media. The framework utilizes individual and community mobility patterns and prioritizes the effect of location data closer in time, to make predictions.
  - **Efficacy of Dengue Vector Control Interventions**: Using over 1.3 million Dengue containment activity data points, we quantify the efficacy of seven types of containment activities. We leverage timeseries and spatio-temporal dependence methods, to understand both short and long term effects of containment on reproduction of Dengue.
  - **Access to Information and Vaccination Sentiment**: Using propensity score matching we first account for confounding variables in the population. We then identify the causal effect of access to health information on the vaccination sentiment of Twitter users.
  - **Transfer Learning in Healthcare**: Examination of the predictive power of six acute respiratory infection datasets varying in size, collection context, and location. We use source only, target only and domain adaptation methods to transfer learning between datasets.
- **Design Technology Lab, NYUAD** — Abu Dhabi, UAE
  Research Assistant — *(June 2015 – August 2015*
  - **Data Generation**: A web interface to generate, visualize and edit datasets. The frontend was designed in D3.js and C3.js, while the backend was written in python.
- **Information Technology University (ITU)** — Lahore, Pakistan
  Research Associate — *2013 – 2015*
  - **Dengue Forecasting via Hotline**: A system which can forecast Dengue incidences three weeks in advance, at sub-city granularity. We train an ensemble model using call volume data from a health hotline, awareness level in community and weather parameters to make predictions.
  - **Dengue Monitoring System for Punjab Govt.**: A system which identifies potential Dengue breeding hotspots. The system uses space-time permutation statistics to cluster *Aedes Aegypti* larvae locations, and logistic regression models, trained on weather parameters, to associates each cluster with a climate likelihood.
- **Lahore University of Management Sciences** — Lahore, Pakistan
  Research Assistant — *2011 – 2013*
  - **FluBreaks**: Early epidemic detection using data from Google flu trends. We test the performance of a wide range of outbreak detection methods on data from Google Flu Trends.
  - **Text Mining for Disease Monitoring**: A system which characterizes the spread and severity of dengue by analyzing local news articles in Pakistan. We leverage NLP techniques to parse and extract features from newspaper articles and train a polynomial regression model to predict severity of Dengue.

Teaching Experience

- **Design Lab 2 – Graduate Level** — ITU
  Teaching Assistant — *Fall 2013*
- **Introduction to Artificial Intelligence – Undergraduate Level** — LUMS
  Teaching Assistant — *Fall 2013*

Programming and Development Skills

R, Python, Matlab, MySQL, D3.js, C++, 3d Studio Max

Awards

- **Dean's Fellowship** — New York University
  PhD Student — *2015 – 2016*

Publications

- Filling in the Timeline: Predicting Individual Level Mobility Timelines using Sparse Location Data from Social Media, **ICWSM** (2018) (*in-submission*) (pre-print on arXiv)
- Comparing the impact of dengue vector control interventions using sub-city resolution data, **PNAS** (2018)(*in-submission*)
- Fine-grained dengue forecasting using telephone triage services, **Science Advances** (2016)
- Using Propensity Score Matching to Understand the Relationship Between Online Health Information Sources and Vaccination Sentiment, **AAAI Spring Symposium** (2016)
- Characterizing Dengue Spread and Severity using Internet Media Sources, **ACM DEV** (2013)
- Punjab-IDSS: Dengue Surveillance, Early Detection and Containment, **mHealth Summit** (2012)
- FluBreaks: Early Epidemic Detection from Google Flu Trends, **JMIR** (2012)

Management Skills

- **Pakistan ICTD Workshop** — Lahore, Pakistan
  Program Committee — *15-16th Jan 2013*
- **LUMS Society for Promotion and Development of Engineering and Sciences** — Lahore, Pakistan
  Executive Council — *2011 – 2012*
- **LUMS PsiFi & LUMS Olympiad** — Lahore, Pakistan
  Organizer and Media Director — *2010 – 2011*