Emaad Ahmed Manzoor

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Education

Carnegie Mellon University – H. John Heinz III College, USA **2016 –**
Ph.D., Information Systems.

Stony Brook University, USA **2015 – 2016**[1]
Ph.D., Computer Science. Advisor: Leman Akoglu.

King Abdullah University of Science and Technology, Saudi Arabia **2013 – 2015**
M.S., Computer Science. Advisor: Panos Kalnis.
Thesis: Scheduling Broadcasts in a Network of Timelines.

Birla Institute of Technology and Science - Pilani, India **2008 – 2012**
Bachelor of Engineering (Honors), Computer Science.
Co-op host: Yahoo!, Bangalore, India.

Publications & Patents

1. xStream*: Outlier Detection in Feature-Evolving Data Streams.*
   Emaad Manzoor, Hemank Lamba, Leman Akoglu.
   ACM SIGKDD 2018 (research track, top 181/983 = 18.41%).

2. RUSH! *Targeted Time-limited Coupons via Purchase Forecasts.*
   Emaad Manzoor, Leman Akoglu.
   ACM SIGKDD 2017 (applied data science track, top 85/396 = 21.47%).

3. *Fast Memory-Efficient Anomaly Detection in Streaming Heterogenous Graphs.*
   Emaad Manzoor, Sadegh M. Milajerdi, Leman Akoglu.
   ACM SIGKDD 2016 (research track with oral, top 70/784 = 8.93%).

4. *Scheduling Broadcasts in a Network of Timelines.*
   Emaad Ahmed Manzoor, Haewoon Kwak, Panos Kalnis.
   Unpublished manuscript (extended version appears as a master's thesis), 2015.
   Patent filed in February, 2015 (`https://patents.google.com/patent/WO2016132332A1`).

Awards

- CMU GSA/Provost Office Conference Funding Award ($500). **2017**
- ACM SIGKDD Student Travel Award ($1,750). **2016, 2017**
- Institute of Advanced Computational Science Young Writer's Award ($500). **2016**
- Stony Brook University Special CS Department Chair Fellowship ($8,000). **2015**
- Worldwide Top 100 (of 1720 teams), IEEE Xtreme 8.0 Programming Competition. **2015**
- Best Mashery Hack & Travel Grant, PennApps X, Philadelphia ($500). **2014**
- King Abdullah University of Science and Technology Fellowship ($140,000)[2]. **2013**
- Erasmus Mundus LCT Masters Scholarship (EUR 40,000)[3]. **2013**
- Employee Performance Bonus, Yahoo! (INR 35,000). **2012, 2013**
- Google Teaching Scholarship, BITS - Pilani, Goa Campus (INR 16,000)[4]. **2011**

Industrial Experience (Full-Time)

Yahoo!, Bangalore. Software Engineer. **Jul 2012 – Aug 2013**

- Built (team of 4) a system for streaming "trending-topic" detection from user-generated content.
- Large impact within the company, improved over previous trend-detection latency by 600%.
- Implemented with Apache Storm, Kafka, HBase and Java.

[1] Incomplete, transferred.
[2] $70,000/year for two years including tuition ($35,000), health insurance ($15,000), stipend ($20,000) and housing.
[3] Declined. Category A scholarship: EUR 20,000/year for two years. Awarded to 4 international applicants.
[4] For the undergraduate Software Development for Portable Devices course taught by Prof. Mangesh Bedekar.

Industrial & Research Experience (Intern)

Pinterest Labs, San Francisco. Research Intern. **Summer 2018**
Upcoming internship with the Knowledge/Content Engineering team.
- Research on deep learning and recommendation systems towards growing the Pinterest Taste Graph.

Max Planck Institute for Software Systems, Kaiserslautern. Research Intern. **Summer 2017**
Advised by Manuel Gomez-Rodriguez.
- Research on crowdsourced knowledge markets and stochastic optimal control.

Quantitative Engineering Design, San Francisco (remote). Research Intern. **Summer 2015**
Advised by cofounders William Wu (Ph.D., EE, Stanford) and Jiehua Chen (Ph.D., Statistics, Stanford).
- Designed and developed an online variant of a Bayesian model to predict financial fraud.
- Developed a reference implementation of Mondrian Forests (online random forests).
- Designed a distributed system architecture to enable online training of a classifier ensemble.

Oregon State University, Corvallis (remote). Google Summer of Code Intern. **Summer 2014**
- Designed and developed a REST service to enable IPMI operations over HTTP.
- Designed and developed an extensible, hierarchical CLI that delegates to the REST service.
- Design and implementation discussed at `eyeshalfclosed.com/tags/#gsoc2014-ref`.

Tachyon Technologies, Bangalore. Research Intern. **Summer 2012**
Advised by cofounder and MIT TR35 awardee Ram Prakash Hanumanthappa.
- Developed a fast, simple and effective algorithm to de-warp photographs of flat book pages.
- Implemented an algorithm from the low-level vision literature to flatten color gradients.
- Applied algorithms to transform photos of comic book pages into web-ready digital comic panels.
- Packaged into an Android app interfacing with my code in MATLAB over a Python HTTP bridge.

Yahoo!, Bangalore. Software Engineer Intern. **Fall 2011**
- Extended the "trending-topic" detection system to be centrally configurable and multi-threaded.
- Implemented a research prototype to detect geographically and demographically niche events.
- Offered and accepted a full-time position (top 3/14 interns from BITS – Pilani University).

University of Massachusetts, Lowell (remote). MVHub Summer of Code Intern. **Summer 2011**
- Built a Debian package for MVHub, a directory of non-profit services.
- Wrote Perl scripts to automate building and updating the Debian package.
- Wrote a Launchpad recipe and set up a PPA to conveniently host and install the package from.

Teaching

See `http://www.eyeshalfclosed.com/teaching/` for teaching material and student evaluations.
- 95-865 Unstructured Data Analysis (CMU). **Fall 2017, Spring 2018**
- 95-813 Intermediate Databases (CMU). **Fall 2017**
- CSE-590 Supercomputing (Stony Brook). **Spring 2016**
- CSE-101 Introduction to Computers & IT (Stony Brook). **Spring 2016**
- Programming Languages and Compiler Design (BITS - Pilani). **Spring 2012**
- MIT Indian Mobile Initiative (BITS - Pilani). **Summer 2011**
- Software Development for Portable Devices (BITS - Pilani). **Spring 2011**

Languages

- Analysis: Python (preferred)
- Performance: C++ (preferred), Java (for distributed systems)

Selected Talks

All slides available at `http://speakerdeck.com/emaadmanzoor`.

Videos available at `http://eyeshalfclosed.com/talks/`.

- *RUSH! Targeted Time-limited Coupons via Purchase Forecasts.* Heinz College, CMU. **May 2018**
- *Fast Memory-efficient Anomaly Detection in Streaming Heterogenous Graphs.*
  - ACM SIGKDD Conference (research-track oral presentation). **Aug 2016**
  - CMU Database Group Seminar (hosted by Christos Faloutsos). **Oct 2016**
  - RSA Laboratories (hosted by Zhou Li and Kevin Bowers). **Nov 2016**
  - CMU Statistical Networks Seminar (hosted by Cosma Shalizi). **Nov 2016**
  - INFORMS Annual Meeting 2016 (invited talk). **Nov 2016**
- *Scheduling Broadcasts in a Network of Timelines.* Masters Thesis Defense, KAUST. **May 2015**
- *Time-Inconsistent Planning.* InfoCloud Research Group Seminar, KAUST. **May 2014**
- *Reviving Failed Classifiers with Random Forests.* Tech talk at Yahoo!. **May 2013**
- *Building a Linux cluster with Beanstalkd.* Tutorial at PyCon India. **Sep 2012**

Selected Graduate Coursework

All completed courses listed were awarded grades A- or higher. Spring 2018 courses are ongoing. Fall 2018 courses are upcoming.

Economics and the Social Sciences

- 88-702: Behavioral Economics (George Lowenstein, CMU) **Fall 2018**
- 90-907: Econometric Theory and Methods (Akshaya Jha, CMU) **Spring 2018**
- 47-958: Economining (Dokyun Lee, CMU) **Fall 2017**
- 90-906: Introduction to Econometric Theory (Edson Severnini, CMU) **Spring 2017**
- 90-908: Microeconomics (Brian Kovak, CMU) **Fall 2016**

Statistics & Machine Learning

- 10-715: Advanced Introduction to Machine Learning (Nina Balcan, CMU) **Fall 2018**
- 10-702: Statistical Machine Learning (Larry Wasserman, CMU) **Spring 2018**
- 36-705: Intermediate Statistics (Larry Wasserman, CMU) **Fall 2016**

Computer Science

- CSE-506: Operating Systems (Michael Ferdman, Stony Brook University) **Fall 2015**
- CSE-532: Theory of Database Systems (Fusheng Wang, Stony Brook University) **Fall 2015**
- CSE-537: Artificial Intelligence (I.V. Ramakrishnan, Stony Brook University) **Fall 2015**
- AMCS-241: Probability and Random Processes (Mohammed-Slim Alouini, KAUST) **Fall 2014**
- CS-390: Computational Complexity (Antoine Vigneron, KAUST) **Fall 2014**
- CS-341: Advanced Topics in Data Management (Panos Kalnis, KAUST) **Spring 2014**
- CS-229: Machine Learning (Xiangliang Zhang, KAUST) **Spring 2014**
- CS-260: Design and Analysis of Algorithms (Mikhael Moshkov, KAUST) **Fall 2013**
- CS-240: Computing Systems and Concurrency (Hany Ramadan, KAUST) **Fall 2013**
- CS-220: Data Analytics (Xin Gao, KAUST) **Fall 2013**