Keith Harrigian

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Education

Aug. 2019 – Present **Johns Hopkins University**
PhD, Computer Science. *GPA*: 4.0/4.0

Sept. 2013 – May 2017 **Northeastern University**
BS, Mathematics. Minors in Physics and Music. *GPA*: 3.91/4.0

Academic Research

Aug. 2019 – Present **Center for Language and Speech Processing (CLSP)**
Graduate Research Assistant | P.I. Mark Dredze

- Evaluate the reliability of mental health machine learning models in environments that differ from those used for training (e.g. data platform, demographic composition)
- Design and deploy a web-based analytics dashboard for summarizing patient electronic communication data to aid in treatment of adolescent and adult mood disorders

Aug. 2014 – Aug. 2019 **The Action Lab**
Research Assistant | P.I. Dagmar Sternad

- Engineered a new algorithm using Hidden Markov Models to precisely detect initiation of finger taps in noisy strain gauge time series data
- Co-supervised "Pitchers and Pianists" study at Boston Museum of Science from September 2015 through May 2016; educated 400+ visitors on human coordination and neural control

Industry Experience

June 2018 – June 2019 **Warner Media Applied Analytics**
Senior Quantitative Analyst

- Developed speech and language feature-extraction tools to model the relationship between thematic content in movie trailers and downstream effects on Wikipedia web traffic

Quantitative Analyst

- Optimized the targeting of interest segments on Facebook in real time using contextual-bandits and factorization of audience overlap matrices
- Advised Masters student on a project to identify film mentions in podcast audio via fuzzy matching and supervised learning, resulting in publication

June 2017 – June 2018 **Legendary Entertainment**
Quantitative Analyst

- Developed a multi-modal model to infer demographics of Reddit users and a collaborative filtering system to segment online communities
- Programmed a tool to extract book titles mentioned on Reddit, scrape metadata from an online reading database, and visualize demographic-level trends in an interactive web app
- Leveraged partial least squares regression to create a content- and marketplace-aware arbitrage model for the digital promotion of news articles

July 2016 – Dec. 2016 **True Fit Corporation**
Scientist (Co-op)

- Designed a robust anomaly detection system to capture fraudulent retail transactions, reducing noise by 10% in recommendation engine training data
- Modeled e-commerce return rates to establish baselines for A/B testing
- Curated resources in scientific literature to motivate foundational design decisions for a proprietary clothing style recommendation platform

July 2015 – July 2016 **Legendary Entertainment**
Quantitative Research Collaborator (Consultant)

- Led R&D of a conditional random field model for end-to-end named entity recognition on Twitter, allowing for dynamic query filtering based on temporal popularity fluctuations

Quantitative Research Analyst (Co-op)

- Created a command-line tool to acquire secondary market sales data and compile revenue reports, enabling 4 professional sports organizations to optimize ticket prices
- Trained Naïve Bayes model to quantify movie-going intent and infer sentiment within tweets

Publications

Harrigian, K.; Aguirre, C.; Dredze, M. Do Models of Mental Health Based on Social Media Generalize? *In Proceedings of the 2020 Conference on Empirical Methods in Natural Language Processing: Findings (EMNLP)*. 16, Nov. 2020.

Harrigian, K.; Guo, D.; Park, S.; Sternad, D. Pitchers and Pianists: A Large-scale Study on Discrete and Rhythmic Timing. *In Preparation*.

Harrigian, K. Geocoding Without Geotags: A Text-based Approach for reddit. *In Proceedings of the 4th Workshop on Noisy User-generated Text (EMNLP)*. Brussels, Belgium. 1, Nov. 2018.

Gundogdu, A.; Sanghvi, A.; **Harrigian, K**. Recognizing Film Entities in Podcasts. *In Proceedings of the 1st Workshop on Machine Learning and Data Mining for Podcasts (KDD)*. London, England. 20, Aug. 2018.

Posters and Talks

Harrigian, K.; Aguirre, C.; Dredze, M. On the State of Social Media Data for Mental Health Research. *Mid-Atlantic Student Colloquium on Speech, Language, and Learning*. College Park, MD. 6, Mar. 2020.

Sternad, D.; Guo, D.; **Harrigian, K**. Pitchers and Pianists: Timing in Discrete and Rhythmic Motor Skills. *New England Sequencing and Timing Meeting*. Storrs, CT. 25, Mar. 2017.

Harrigian, K.; Sanders, N.; Foster, J.; Sanghvi, A. When Anonymity is Not Anonymous: Gender Inference on Reddit. **Won Outstanding Student Research (Computer and Information Sciences).** *Northeastern Research, Innovation, and Scholarship Expo*. Boston, MA. 7, Apr. 2016.

Harrigian, K.; Kuznetsov, N.; Sternad, D. Effects of tDCS on Precision of Finger Force Control and Rhythmic Tapping Movements. *Northeastern Research, Innovation, and Scholarship Expo*. Boston, MA. 9, Apr. 2015.

Honors and Awards

Oct. 2016	**Marshall Fellowship Finalist** Nominated by faculty for outstanding academic merit and ambassadorial ability
Oct. 2016	**Rhodes Fellowship Nominee** Nominated by faculty for scholarly merit, social commitment, and leadership
Apr. 2016	**Outstanding Student Research (Computer and Information Sciences)** Best undergraduate poster in Computer and Information Science at Northeastern RISE 2016
Dec. 2015	**Barry Goldwater Scholarship Nominee** Research Proposal: Extreme Learning Machine for Localization of EEG in Parkinson's Patients

Grants

Apr. 2015	**Undergraduate Research and Creative Endeavors Award** $1000 to research effect of metric structure strength on motor learning of temporal rhythms
Apr. 2014	**Lawrence Award for Undergraduate Scholastic Excellence in Physics** $250 scholarship awarded to student(s) with the highest GPA in class year
Sept. 2013	**Northeastern College of Science Dean's Scholarship** $80,000 scholarship awarded to top incoming undergraduates

Academic Service

Aug. 2019 – June 2020 **Northeastern Honors Program**
Alumni Advisor
- Provide career and course guidance to two Northeastern University computer science undergraduate students

Sept. 2015 – May 2017 **Northeastern College of Science**
Peer Advising Coach and Ambassador
- Met weekly with a first-year physics undergraduate student to instill successful academic habits; curated a study schedule to address time-management issues

Sept. 2013 – Jan. 2016 **Northeastern Student Government Association**
Chair of Elections
- Raised voter turnout by 25% to a record high for campus of 18,000 undergraduates
- Reformed referendum process by increasing accountability and transparency of legislature

Community Service

Apr. 2014 – Apr. 2018	**Boston Athletic Association** *Team Captain (Recycling)* ▪ Led recycling operations for the Boston Marathon Finish Area ▪ Supervised team of 40+ volunteers in collection of recyclable goods and trash
Jan. 2009 – Aug. 2014	**Golden Retriever Club of Greater Los Angeles Rescue** *Volunteer and Foster* ▪ Served as caretaker for over 40 dogs; assisted in their transportation to medical appointments ▪ Expedited revenue collection at several fundraisers via PayPal

Reviewing Service

Journals	Journal of Medical Internet Research (JMIR)

Advising

Apr. 2020 – Present	**Narayani Wagle**. Johns Hopkins University. Undergraduate Student.
Jan. 2019 – June 2019	**Aniruddah Tapas**. Warner Media Applied Analytics. Co-op Student.
Oct. 2018 – Dec. 2018	**Ryan Oakley**. Warner Media Applied Analytics. Co-op Student.
Jan. 2018 – June 2018	**Ahmet Gundogdu**. Warner Media Applied Analytics. Co-op Student.

Technical Skills

Programming Languages	Python (Advanced), SQL (Intermediate), R (Functional), Stan (Functional), MATLAB (Functional)
Miscellaneous	Git (Intermediate), Bash (Intermediate)
Certifications	National Institutes of Health Office of Extramural Research (Human Subjects)