Alicia Nobles

linkedin.com/in/alicia-nobles | San Diego, CA

Researcher Building & Critically Evaluating Health Surveillance & Response

Systems engineer with 13 years of engineering, data science, & public health experience focused on building innovative digital health solutions. I lead a team of researchers that apply data science and qualitative methods to monitor user-generated content for health insights and build responses that increase trust in engineered systems.

Skills

- **Programming:** Python, R, GIS, LaTeX
- **Methods:** natural language processing | supervised & unsupervised machine learning | time series modeling (ARIMA) | deep learning | survey design | qualitative analysis
- **Data:** structured (electronic health records, surveys, time series) | unstructured (text, images) | geospatial
- **Collaboration:** Interdisciplinary collaboration (computer science, engineering, public health, medicine, policy), sponsors (NIH), stakeholders (commercial, regulatory agencies, state/federal agencies)
- **General:** technical (for industry proposals & research grants) & non-technical (for news media & the public) writing | leadership | designing & deploying engineered systems | subcontractor procurement

Experience

Assistant Professor | University of California San Diego | San Diego, CA　　　　　**Feb 2020 - Current**
Professor in Dept of Medicine designing & executing a research agenda on digitally-mediated public health surveillance & response

- Procured $1.2 million in funding from NIH, TRDRP, UCOP as principal investigator within 6 months
- Mentor & assign tasks to 10 postdoc, grads, & undergrads resulting in outstanding mentee evaluations
- Deliver lectures on the ethics of data privacy & machine learning fairness & bias
- Applied NLP to 500k Reddit interactions to discover disparities in topics & empathetic support across demographics in a health community; suggested actionable recommendations to decrease disparities
- Organized ICWSM workshop with leading privacy scholars on data privacy for social media research

Postdoctoral Fellow | University of California San Diego | San Diego, CA　　　　　**Oct 2018 - Feb 2020**
Training in public health (behavioral health & health policy) in Div of Infectious Diseases & Global Public Health

- Applied ARIMA models to construct counterfactuals to estimate divergence between observed & forecasted public interest (proxied by Google searches) after social movements & policy changes. Used enhanced insights to suggest digitally-mediated resources for people seeking information online.
- Estimated increased Googling long acting reversible contraception after the 2016 US election (10-21 million [15%] searches more than forecasted)
- Identified 97% decrease in Googling for phone helplines following news reports of a celebrity overdose compared to celebrity suicide; findings led to agreement by CNN to include helplines in future reporting.

Visiting Scholar | Johns Hopkins University | Baltimore, MD　　　　　**May 2018 - Sep 2018**
Training & continued mentorship at Malone Center for Engineering in Healthcare & Human Language Technology Center of Excellence for processing large multimodal data & NLP

- Combined topic modeling with computer vision to identify themes present in 50k Instagram #HIV images. Developed actionable recommendations for public health officials to partner with content creators.

Graduate (PhD + MS) Researcher | University of Virginia | Charlottesville, VA　　　　　**Aug 2012 - Dec 2018**
Training in data mining of user-generated health data, analysis of clinical data & geospatial data, & cost analysis

- Procured $810k in research grants & fellowships resulting in 7 publications with 22 collaborators
- Built a deep learning model to identify active suicidaility in 1+ million text messages from suicide attempters, examined stratified performance for bias, & outlined ethics & challenges of deploying model in clinical settings

- Examined 5.7 million patient visits for 980k patients with 4.5k unique diagnoses from 23 multi-site clinics; found that data quality varies based on insurance billing practices
- Linked siloed databases to conduct a cost analysis of nutrient credit trading for the Virginia Department of Transportation; provided actionable evidence for VA to purchase $2 million of credits

Civil Engineer | CH2M Hill | Atlanta, GA   **Aug 2006 - April 2010**
Staff engineer providing environmental engineering consulting services for corporations & government

- Served key roles (onsite engineer, design engineer, data collection & quality assurance manager) for multi-million dollar, multi-site remediation engineering throughout the entire life cycle (investigation; feasibility studies; design, deployment, & monitoring of large-scale engineered systems; & public relations).
- Managed budget, staffing, & schedule for 44 simultaneous environmental investigation sites in US & Caribbean. Authored 44 reports in less than 3 weeks saving $20,000 of a $60,000 budget coordinating with personnel in 10+ offices. Authored proposal that was awarded $1.2 million for follow-up investigation.

Education

Postdoc Public Health | University of California San Diego   Jan 2020
PhD Systems & Information Engineering | University of Virginia   Dec 2018
MS Civil Engineering | University of Virginia   Aug 2014
BS Civil Engineering | Georgia Institute of Technology   Dec 2007

Selected Publications

Published 30 research studies in top health journals & computer science venues. Research covered by NY Times, CNN, BBC, NPR, NBC, etc and ranked in the top 0.01% of all research outputs (measured by Altmetric).

- Mueller et al. Demographic Representation & Collective Storytelling in the Me Too Twitter Hashtag Activism Movement. ACM CSCW. 2021.
- Ayers et al. Internet Searches for Acute Anxiety During the Early Stages of the COVID-19 Pandemic. JAMA Intern Med. 2020.
- Nobles et al. Examining Peer-to-Peer & Patient-Provider Interactions on a Social Media Community Facilitating Ask the Doctor Services. AAAI ICWSM. 2020.
- Nobles et al. Requests for Diagnoses of Sexually Transmitted Diseases on a Social Media Platform. JAMA. 2019.
- Nobles et al. Identification of imminent suicide risk among young adults using text messages. ACM CHI. 2018.

Selected Awards, Fellowships, & Grants

NIH NIDA K25 grant ($947k), TRDRP grant ($200k), UCOP grant ($25k), UVA StatLab Fellowship ($6.4k), UVA Presidential Fellowship in Data Science ($25k), JSF Fellowship ($120k), Commonwealth Fellowship in Engineering ($32.5k), UVA All Teaching Award (honorable mention), NSF GRFP (honorable mention), Ch2M Hill Beyond Performance Award (4x), New Faces of Engineering (nomination)

Relevant Courses & Training

Courses: agent based models, big data in health, computational research, data mining, epidemiology, environmental epidemiology, GIS, US health policy, regression methods, machine learning, optimization, research ethics, stochastic modeling, text mining

Training: Transdisciplinary Big Data Science (NIH T32), Substance Use, HIV, & Related Infections (NIH T32), Big Data for Computational Medicine (Weill Cornell Medicine), Healthcare Data Analytics (Oregon Health & Science University), Institutions in Context (University of Tampere), Advocacy in Science & Engineering (AAAS)

Additional Engagements

Reviewer for JAMA, AJPH, AMIA, CSCW, ICWSM, Substance Abuse, JMIR | member, volunteer, speaker @ Women Who Code San Diego, Girls in Tech San Diego, San Diego Machine Learning, PyData San Diego | Spanish student (A3) @ Pura Buena Onda