

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 (industry proposals & research grants) & non-technical (news media & public relations) writing | IRB protocol | leadership | 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 suicidality from 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