

# THOM MIANO

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## Selected Projects

### **Phosphorescent aerosol image detection** (2017 to date)

- Working with a team of engineers, software developers, and data scientists using SCRUM and test-driven development to build a user-friendly, automated imaging system that quantifies aerosol concentration on skin and provides evaluation statistics on tested protective garments.

### **Zika immunization site placement optimization** (2016)

- Designed a research project for and mentored two students in Duke iid Data+.
- The team developed a model for disease spread based on transmission characteristics of Zika virus, using a simulated population of Durham County, NC.
- They determined optimal placement for clinics to minimize public health impact using Cover Tree assignment, recursive removal of vaccinated population, and geospatial proximity to clusters of residents.

### **Cluster analysis of neurocognitive measurements in TBI population** (2017)

- Worked with clinicians, neuroscientists, and statisticians to explore the use of dimensionality reduction and clustering techniques in identifying clusters of individuals with varying levels of injury severity, and measuring the significance of these clusters as they related to different clinical outcomes.

### **Social media user classification** (2015 to 2017)

- Collaborated with a team of social scientists and data scientists to collect over 15 million e-cigarette related tweets, and developed performant classification models for differentiating types of users who tweet about e-cigarettes.
- Used NLP techniques to derive behaviorally characteristic features, which were significant in distinguishing types of users.

## Graduate Research

### **Endoscopy procedure performance evaluation & dashboard development** (2014 to 2015)

- Collaborated with endoscopists at the University of Virginia Health System to develop models for evaluating procedure performance according to established standards.
- Contributed to the literature, finding that the presence of a trainee endoscopist accounted for 34% of variation in polyp detection rate in endoscopies.
- Developed an interactive dashboard for the monitoring of physician performance.

### **Patent Assessor Data Mining: Detecting NPEs Using Machine Learning Methods** (2015)

- Developed machine learning methodology for detecting non-practicing entities.
- Collaborated with OpenSource Connections, integrating United States Patent and Trademark Office data, public patent assessor data, and private patent assessor data.

## Professional Experience

### **Assembly - Berkman Klein Center & MIT Media Lab**, Machine Learning Engineer (2018)

- Collaborating with a broad team on artificial intelligence and governance issues.
- Building tools and technologies related to AI, governance, and ethics.

### **RTI International**, Research Data Scientist I (2016 to date); Data Scientist III (2015 to 2016)

- Apply machine learning in research and software development.
- Technical lead on several projects.
- Actively involved in business development, proposal writing, and systems design.

### **Stim Space, LLC**, Co-Founder, Chief Operating and Technology Officer (2013 to 2015)

- Conducted market research and developed strategies for building an innovation economy in Charlottesville, VA.
- Developed a gamified customizable flash-card device on Arduino.
- Consulted with a NYC theater company, streamlining customer acquisition processes and building an interactive costs projections system.

### **City Year AmeriCorps**, Corps Member (2012 to 2013)

- Spearheaded and mentored seven students through a data-driven approach to gamified curricula and personalized education.
- Taught science and mathematics to 45 sixth graders.
- Raised \$10,000 as lead fundraising liaison between City Year and the law community.

## Education

### **University of Virginia**, MS in Data Science (2014 to 2015)

- Thesis: Monitoring Quality Indicators for Screening Colonoscopies

### **University of Virginia**, BA with Distinction, Political Philosophy, Policy, & Law (2008 to 2012)

- Thesis: Reevaluating the Strength of Negative Liberty: A meta-ethical argument

## Honors and Awards

### **RTI International**

- *On-Spot Award for exceptional presentation in Artificial Intelligence* (April 2017)
- *Annual Award for excellent performance* (December 2016)
- *Lead Forward Award for mentoring Duke undergraduate students* (August 2016)
- *Most Likely to Succeed - Idea Accelerator* (December 2015)

### **Startup Weekend**

- *Top 3 Business Plan*, Charlottesville (March 2014)

### **AmeriCorps**

- *Segal Education Award* for 1600+ Volunteer Hours (May 2013)

### **University of Virginia**

- *Dean's List* (Fall 2009 to Spring 2012)

## Technical Skills

**Languages:** Python, R, JavaScript, HTML/CSS, SAS, Processing, SQL

**Libraries:** PyTorch, SciPy core stack, Scikit-learn, OpenCV, Bokeh, D3.js, ggplot2

**Misc.:** Git, Docker, PostgreSQL, MongoDB, Illustrator, Photoshop, Logic Studio

## Soft Skills

**Leadership:** Strategy Implementation, Project Management, Community Development

**Communication:** Writing, Negotiation & Conflict Resolution, Public Speaking, Teaching

## Country Experience

Colombia, Costa Rica, England, France, Grenada, Ireland, Israel, Italy, Netherlands, South Korea, State of Palestine, Spain, Turkey

## Presentations and Proceedings

Kim A., Miano T., Chew R., Eggers M., Nonnemaker J.. *Classification of Twitter Users Who Tweet About E-Cigarettes. JMIR Public Health Surveillance 2017;3(3):e63. DOI: 10.2196/publichealth.8060*

Miano, T. (2017, April). *Case studies in design thinking, visualization, and communication.* Guest lecturer at the university of Virginia School of Architecture, Charlottesville VA.

Miano, T. (2017, April). *Artificial Intelligence.* Presented at RTI International in Durham, NC.

Annice E. Kim, PhD, MPH, Jamie Guillory, PhD, Rob Chew, MS, Thomas Miano, MS and Bing Liu, PhD (2016, November), *Strategies for addressing methodological challenges in analyzing Twitter data for public health research.* Presented at American Public Health Association Conference, Chicago, IL.

Miano, T. (2016, September). *Immersive art in virtual reality.* Presented at the 2016 University of Virginia Datapalooza Annual Conference, Charlottesville VA.

Chew, R. F., Morris, J., Duparc, R., Manley, M. S., Miano, T. N., Bieler, G., Bir, A., Bland, C., & Considine, K. A. (2016, May). *Design and Data Science: Changing the Face of Survey Data Reporting.* Poster presented at 2016 AAPOR Annual Conference, Austin, TX.

Miano, T. (2016, April). *Workshop in building interactive data visualizations for the web.* Guest lecturer at the University of Virginia School of Architecture, Charlottesville VA.

Miano, T. (2016, April). *Case studies in design thinking and data visualization.* Guest lecturer at University of Virginia School of Architecture, Charlottesville VA.

Miano, T. (2015, December). *Ethics in data science and artificial intelligence.* Presented at RTI International in Durham, NC.

Charles, M., Miano, T. N., Zhang, X., Barnes, L. E., & Lobo, J. M. (2015). Monitoring quality indicators for screening colonoscopies. In *Systems and Information Engineering Design Symposium (SIEDS)*, 171-175.