

Colonel Matthew Benigni, Ph.D

CHIEF DATA SCIENTIST

DC METRO AREA

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“Iterate to Optimal”

About

I am a technical and strategic data science advisor within the Department of Defense. I specialize in building enterprise analytic teams and enabling digital transformation. I currently serve as the Chief Data Scientist for USSOCOM's Global Analytics Platform. My interests are at the intersection of data science and national security with a focus on applied intelligence augmentation through machine learning.

Experience

Chief Data Scientist, Skope Director

Washington, DC

DoD/IC/IA

Jun. 2017 - Present

- As Chief Data Scientist for the Global Analytics Platform responsible for implementing machine-intelligence at the enterprise level.
- As Skope Cell director transformed an software engineering team into a high performing analytics cell offering data science as a service.

Operations Research Systems Analyst

MacDill AFB, FL

UNITED STATES SPECIAL OPERATIONS COMMAND (USSOCOM)

Aug. 2011 - Jun. 2014

- Executive Officer to the Director J8 Force Management.
- Analytic Decision Support for Risk Assessment and Capability Development.

Assistant Professor

West Point, NY

DEPARTMENT OF MATHEMATICAL SCIENCE, USMA

Jun. 2008 - Jun. 2011

- Instruction: Introduction to Probability and Statistics, Mathematical Modeling
- Consulting: managed \$ 160K research contract delivering a scheduling analytic to the School of Advanced Leadership and Tactics

Company Commander

Baghdad, Iraq / Fort Hood, TX

FIRST CAVALRY DIVISION

- Armor-Mech Company Team Commander, 1-12 CAV, Eastern Baghdad, Operation Iraqi Freedom II, August 2004 - June 2005.
- Headquarters and Headquarters Troop Commander, 1/7CAV, Fort Hood, TX, July 2005 - May 2006.

Education

Carnegie Mellon School of Computer Science

Pittsburgh, PA

PH.D IN SOCIETAL COMPUTING

2017

- Thesis Title: Detection and Analysis of Online Extremist Communities

Colorado School of Mines

Golden, CO

M.S. IN APPLIED STATISTICS

2008

United States Military Academy

West Point, NY

B.S. IN OPERATIONS RESEARCH

1998

Skills

Research Interests

SOCIAL MEDIA ANALYSIS, NETWORK SCIENCE, TRAJECTORY MINING, REPRESENTATION LEARNING,
HUMAN-COMPUTER INTERACTION, SPATIAL POINT PATTERN ANALYSIS

Technical Skills

LANGUAGES: R, SQL, PYTHON; TECHNOLOGIES: AWS, KUBERNETES, DOCKER

Awards

2017 USSOCOM Lambersten Award

AWARDED FOR OPERATIONAL INNOVATION. ESTABLISHED THE FIRST SPECIAL OPERATIONS JOINT TASK FORCE
(SOJTF) TACTICAL DATA EXPLOITATION TEAM (TDET) WHICH PAIRED DATA SCIENTISTS ALONGSIDE INTELLIGENCE
ANALYSTS WITH GREAT EFFECT.

Research

Publications

- Benigni, Matthew, Joseph, Kenneth, and Kathleen M. Carley. "Online Extremism and the Communities that Sustain It: Detecting the ISIS Supporting Community on Twitter" *PloS one* 12.12 (2017): e0181405..
- Benigni, Matthew, and Kathleen M. Carley. "Mining Online Communities to Inform Strategic Messaging: practical methods to identify community-level insights" *Computational & Mathematical Organization Theory* 24.2 (2018): 224-242.
- Benigni, Matthew C., Kenneth Joseph, and Kathleen M. Carley. "Bot-ivism: Assessing Information Manipulation in Social Media Using Network Analytics." *Emerging Research Challenges and Opportunities in Computational Social Network Analysis and Mining*. Springer, Cham, 2019. 19-42.
- Benigni, Matthew, and Reinhard Furrer. "Spatio-Temporal Improvised Explosive Device Monitoring: Improving Detection to Minimise Attacks." *Journal of Applied Statistics* 39, no. 11 (November 1, 2012): 2493–2508. doi:10.1080/02664763.2012.719222.
- Benigni, Matthew, and Kathleen M. Carley. "From Tweets to Intelligence: Understanding the Islamic Jihad Supporting Community on Twitter." *International Conference on Social Computing, Behavioral-Cultural Modeling and Prediction and Behavior Representation in Modeling and Simulation*. Springer, Cham, 2016.
- Joseph, Kenneth, Wei Wei, Matthew Benigni, and Kathleen M. Carley. "A Social-Event Based Approach to Sentiment Analysis of Identities and Behaviors in Text." *The Journal of Mathematical Sociology* 40, no. 3 (July 2, 2016): 137–66. doi:10.1080/0022250X.2016.1159206.
- Kumar, S., M. Benigni, and K. M. Carley. "The Impact of US Cyber Policies on Cyber-Attacks Trend" In *2016 IEEE Conference on Intelligence and Security Informatics (ISI)*, 181–86, 2016. doi:10.1109/ISI.2016.7745464.

Tutorials

- Benigni, Matthew. "Tutorial: Detecting Online Extremist Communities on Twitter." *2016 International Conference on Social Computing, Behavioral-Cultural Modeling, Prediction and Behavior Representation in Modeling and Simulation*.
- Benigni, Matthew. "Tutorial: Detecting Online Extremist Communities on Twitter." *Military Operations Research Society Workshop on Activity-Based Intelligence*. 2016.

Software

- R Package: OEC Detect. available upon request.