Fatma Uyar Morency, PhD

LinkedIn/fatmauyar
+1 (412) 736-8793

atmauyar@gmail.com
GitHub | Website

Summary

Data scientist with a proven track record of success in leading clinical research projects. Leveraging expertise in *behavioral analysis*, *statistics* and *machine learning* for *data science*.

Education

2008 - 2013 **Ph.D.,** Materials Science and Engineering, **Carnegie Mellon University**

2010 Computational Neuroscience Summer School, **University of Ottawa**

2006 - 2008 **M.S.,** Materials Science and Engineering, **Carnegie Mellon University**

2002 - 2006 **B.S.,** Materials Science and Engineering, **Sabanci University**

Experience

2016 - 2018 ***Research Scientist,*** **Carnegie Mellon University**

- Project management: Managed research projects under Army Research Lab funding; analyzed wearable sensor digital data and brain structural connectivity to predict sleep fatigued behavior and performance outcomes in realistic, army-relevant scenarios; prepared effective visualizations, and status reports.
- Data validation: Lead the investigation of data errors in preprocessing pipeline for Hadoop HDFS neuroimaging database (~1 TB); built ground-truth test cases and corrected errors in datafile handling and image coordinate system alignments.
- Predictive modeling: Built Predictive Flow Algorithm which utilizes machine learning to generate a graph model for predictive relationships between brain regions based on neural time series data (R^2 ~0.8); extending over state-of-the-art brain connectivity analysis.

2014 - 2016 ***Post-doctoral Researcher,*** **University of Pittsburgh**

- Data management: Lead the development of parallel data preprocessing pipelines with documentation; resulting in 800% speed up in analysis of MRI images across multiple datasets (obesity, Parkinson's, depression) enabling to secure $21.8 million grant.
- Data consultant: Advised external CMU-PITT cardiovascular health/machine learning project; built visualization tools for interpretable machine learning models; co-authored paper on prediction of heart disease risk markers using brain activity during under stress tasks.

2014 - 2015 ***Instructor,*** **Center for Neural Basis of Cognition**

- Training: Developed training course under NIH T90 grant to educate graduate students, postdocs and faculty (US and international) in brain imaging and machine learning; launched neuroimaging careers for 12 trainees; trainee outcomes include $25K+ UCSF pilot grant.

2011 - 2013 ***Associate Researcher,*** **George Washington University**

- Research: Executed a complete human research study: designing experimental protocol, recruiting stroke patients, overseeing MRI procedures, statistical testing, and SVM classification of neural data; enabled four conference presentations and a journal article.

Skills

Languages Python (Pandas, NumPy, Scikit-Learn, PySpark, Matplotlib, Plotly, NLTK), Matlab, R, c++

Tools Jupyter Notebook, Amazon AWS, Tableau, SPSS, SQL, git

Statistics GLM, ANOVA, causality analysis, hypothesis testing, multiple comparisons corrections

Machine Learning Linear/logistic regression and classification, LASSO, SVM, neural networks, k-means clustering, ensemble methods, recommender systems, natural language processing

Certifications The Data Science of Marketing, NLP with Python for Machine Learning Essential Training, Tableau 10 Essential Training, Python for Data Science and Machine Learning Bootcamp

Publications

2019 **Predictive Flow Model of Resting-State Functional Network and Structural Constraint Analysis,** Fatma Uyar Morency, Javier O. Garcia, Jean M. Vettel, and Timothy Verstynen *[in prep.]*

2018 **Associations Between Cardiorespiratory Fitness, Physical Activity, Intraindividual Variability and Cingulate Cortex in Younger Adults,** Joao Bento-Torres, Natali Bento-Torres Chelsea M. Stillman, George A. Grove Jr., Haiqing Huang, Fatma Uyar, Jennifer C. Watt, Marigold E. Wollam, Kirk I. Erickson. ***Journal of Sport and Health Science***

2018 **Cardiorespiratory Fitness Is Associated with Enhanced Hippocampal Functional Connectivity in Healthy Young Adults,** Chelsea M. Stillman, Fatma Uyar, Haiqing Huang, George A. Grove Jr., Jennifer C. Watt, Mariegold E. Wollam and Kirk I. Erickson. ***Hippocampus***

2017 **A Brain Phenotype for Stressor-Evoked Blood Pressure Reactivity,** Peter J. Gianaros, Lei K. Sheu, Fatma Uyar, Jayanth Koushik, J. Richard Jennings, Tor D. Wager, Aarti Singh, Timothy D. Verstynen. ***Journal of American Heart Association***

2016 **Retinotopic Information Interacts with Category Selectivity in Human Ventral Cortex** Fatma Uyar, Sarah Shomstein, Adam S. Greenberg, Marlene Behrmann. ***Neuropsychologia***

2016 **Physical Activity Is Associated with Reduced Implicit Learning but Enhanced Relational Memory and Executive Functioning in Young Adults,** Chelsea M. Stillman, Jennifer C. Watt, George A. Grove Jr., Marigold E. Wollam, Fatma Uyar, Maria Mataro, Neal J. Cohen, Darlene V. Howard, James H. Howard, Kirk I. Erickson. ***PLOS One***

2013 **Sensory Processing with Varying Degrees of Attention: Lessons from Hemispatial Neglect,** Sarah Shomstein, Fatma Uyar, Adam S. Greenberg, Marlene Behrmann. ***Journal of Vision***

2012 **Simulation of Grain Growth under the Effect of Stress,** Fatma Uyar, Seth R. Wilson, Myrjam Winning, Anthony D. Rollett. ***Materials Science Forum***

2009 **Testing a Curvature-Driven Moving Finite Element Grain Growth Model with the Generalized 3-D von Neumann Relation,** Fatma Uyar, Seth R. Wilson, Jason Gruber, Sukbin Lee, Stephen Sintay, Anthony D. Rollett, David J. Srolovitz. ***International Journal of Materials Research***

2008 **Testing the MacPherson-Srolovitz Theory in Simulations of 3-D Grain Growth,** Anthony D. Rollett, Fatma Uyar, Seth R. Wilson, Jason Gruber, Sukbin Lee. ***Bulletin of the American Physical Society***

Presentations

2012 **Sensory Processing with Varying Degrees of Attention: Lessons from Hemispatial Neglect**
Poster Presentation, Society for Neuroscience Conference, New Orleans, LA

2010 **Tissue Development in Arabidopsis: 3-D Shape Analysis for Automated Detection of Cell Type**
Poster Presentation, The Minerals, Metals and Materials Society Meeting, Seattle, WA

2009 **Stagnation of Thin Film Grain Growth Under the Effect of Stress**
Invited talk, Materials Science and Technology Conference, Pittsburgh, PA

2009 **Effect of Stress on Grain Boundary Network**
Oral Presentation, Computational Materials Science Network Meeting, San Francisco, CA

2008 **Application of Mean Width to 3-D Materials Science**
Oral Presentation, The Minerals Metals Materials Society Conference, New Orleans, LA

2006 **PVP Micellar Nanoreactors for Blue-Luminescent ZnO Quantum Dots**
Poster Presentation, Materials Research Society Conference, San Francisco, CA

Honors and Awards

2010 University of Ottawa Computational Neuroscience Summer School Fellowship

2006 - 2011 Carnegie Mellon University Graduate Student Fellowship

2002 - 2006 Sabanci University High Honor Full Tuition Scholarship

2002 Ranked **27th** among **1,489,351** in the Turkish National University Entrance Exam