Matthew L. Dering

Contact Information	1051 Teaberry Ln, Apt E205 State College, PA 16803 http://sites.psu.edu/dering/	(610) 209-9072 matthew.dering@gmail.com

Research Interests

Deep Learning, Convolutional Neural Networks, Human Dynamics and Behavior, Product Design, Computer Vision, Automated Content Generation.

Education

Penn State University, University Park, PA

Ph.D., Computer Science and Engineering, *Expected:* December 2017

- Thesis Topic: *Using Deep Learning To Provide Computer Aided Design in Physical Spaces*
- Advisors: Conrad S. Tucker, Ph.D and Daniel Kifer, Ph.D

M.S., Computer Science And Engineering, March 2014

- Topic: *Android Market: Large Scale Reconstruction and Analysis*
- Advisor: Patrick McDaniel, Ph.D

Swarthmore College, Swarthmore, PA

B.A., Psychology June 2007

Research Experience

Research Assistant — July 2014 to present
Penn State DATALab,
Penn State University
Supervisor: Conrad S. Tucker, Ph.D

Summer Researcher — Summer 2015
Air Force Institute of Technology,
Dayton, OH
Supervisor: Kenneth Hopkinson, Ph.D

Research Assistant — June 2012 to May 2014
SIISLab,
Penn State University
Supervisor: Patrick McDaniel, Ph.D

Summer Intern — Summer 2013
Cigital, Inc.
Dulles, VA

Summer Student — Summer 2012
MIT Lincoln Labs,
Lexington, MA
Supervisor: Thomas Moyer, Ph.D

Summer Intern — Summer 2011
Cisco Systems,
San Jose, CA

Refereed Publications

1. **Dering, M. L.** and Tucker, C. S. "Implications of Generative Models in Government" *AAAI Fall Symposium*, 2017.
2. **Dering, M. L.**, Tucker, C. S., and Kumara, S. "An Unsupervised Machine Learning Approach To Assessing Designer Performance During Physical Prototyping" *Journal of Computing and Information Science in Engineering*, 2017.
3. **Dering, M. L.** and Tucker, C. S. "A Convolutional Neural Network Model for Predicting a Products Function, Given Its Form" *Journal of Mechanical Design: Data Driven Design*, 2017.
4. **Dering, M. L.** and Tucker, C. S. "Early Predicting of Student Struggles Using Body Language" *ASEE Annual Conference & Exposition*, 2017.
5. Bodnar, T., **Dering, M. L.**, Tucker, C., and Hopkinson, K. M. "Using Large-Scale Social Media Networks as a Scalable Sensing System for Modeling Real-Time Energy Utilization Patterns." *IEEE Transactions on Systems, Man, and Cybernetics: Systems.*, PP (99):1–14, 2016.
6. Octeau, D., Jha, S., **Dering, M.**, McDaniel, P., Bartel, A., Li, L., Klein, J. and Le Traon, Y. "Combining static analysis with probabilistic models to enable market-scale android inter-component analysis." *ACM SIGPLAN Notices* 51(1):469–484, 2016.
7. **Dering, M. L.**, and Tucker, C. S. (2015, August). "A Computer Vision Approach for Automatically Mining and Classifying End of Life Products and Components." *2015 International Design Engineering Technical Conferences and Computers and Information in Engineering Conference* V004T05A007–V004T05A007.
8. Octeau, D., Luchaup, D., **Dering, M.**, Jha, S., and McDaniel, P. "Composite constant propagation: Application to android inter-component communication analysis." *Proceedings of the 37th International Conference on Software Engineering* 1:77–88, 2015.
9. **Dering, M. L.**, and McDaniel, P. "Android market reconstruction and analysis." *Military Communications Conference (MILCOM)*, 2014:300–305.

Submitted Conference Publications

1. **Dering, M. L.** and Tucker, C. S. "Generative Adversarial Networks for Increasing the Veracity of Big Data" *IEEE International Conference on Big Data*, 2017.

Papers in Preparation

1. **Dering, M. L.** and Tucker, C. S. "Dis-Kinect-ed: Using Deep Learning for Simultaneous Pose and Depth Estimation".

Awards

Grant Awards

- NVIDIA K40 Hardware Grant, June 2016

Teaching Experience

Teaching Assistant — Fall 2014–Spring 2015

CMPSC 201 - Introduction to Programming for Engineers
Instructor: Martin Yeh, Ph.D
Computer Science and Engineering,
Penn State University

Hardware and Software Skills

Programming Languages:

- Python, C, C++, Java, Ruby, SQL, MySQL, Matlab, and others

Software:

- Scikit-learn, Tensorflow, Theano, (Py)Torch, Matplotlib, Opencv, PCL, Boost, D3 and many others

Skills:

- Data Science, Robotics, Image Processing, Artificial Intelligence, Text Analysis, Visualization, Time Series Analysis.