

# Teddy Koker

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EDUCATION **Worcester Polytechnic Institute**, Worcester, MA  
*B.S., Computer Science* **Sep 2016 – Dec 2019**  
3.69/4.0 GPA. Senior thesis focused on applications of machine learning to social network graphs to predict future connections. Completed coursework in statistics, probability theory, machine learning, and computer architecture.

PROFESSIONAL EXPERIENCE **Grid AI**, New York City, NY  
*AI Research Engineer* **Aug 2020 –**  
Led project on model interpretability, introducing a new way of generating pixel level saliency maps. Created a package of metrics capable of efficient computation across multiple GPUs and server compute nodes. Continuing research within self-supervised learning of image representations.

**Harvard Medical School**, Boston, MA  
*Machine Learning Research Associate* **Dec 2019 – Aug 2020**  
Conducted research within the Image and Data Analysis Core. Created deep learning model to detect manipulation of microscopy images. Proposed a novel approach to biomedical image retrieval.

**Analog Devices Incorporated**, Boston, MA  
*Research Engineering Intern* **May 2019 – Aug 2019**  
Researched and implemented a state-of-the-art inertial navigation system for use in autonomous transportation. Assisted in other projects within the Autonomous Transportation group involving radar and lidar algorithms.

*Part-Time Software Engineering Intern* **Sep 2017 – Apr 2018**  
Created software to analyze products' data sheets and highlight potential security risks. Results were then presented at an internal conference.

*Software Engineering Intern* **Jun 2017 – Aug 2017**  
Built an efficient data communication protocol and software for internet-connected agricultural sensors that is currently deployed in farms across the world.

PUBLICATIONS **T.E. Koker**, F. Mireshghallah, T. Titcombe, and G. Kaissis. 2021. U-Noise: Learnable Noise Masks for Interpretable Image Segmentation. *Under Review*.

**T.E. Koker\***, S.S. Chintapalli\*, S. Wang, B.A. Talbot, D. Wainstock, M. Cicconet, M.C. Walsh. 2020. On Identification and Retrieval of Near-Duplicate Biological Images: a New Dataset and Protocol. *International Conference on Pattern Recognition*.

**T.E. Koker** and D. Koutmos. 2020. Cryptocurrency Trading Using Machine Learning. *Journal of Risk and Financial Management*. doi:10.3390/jrfm13080178.

PROJECTS **Personal Writing**, <https://teddykoker.com>  
*Performers: The Kernel Trick, Fourier Features, and Attention*, 5,000+ page views **Dec 2020**  
*Deep Learning for Guitar Effect Emulation*, 15,000+ page views **May 2020**  
*NLP from Scratch: Annotated Attention*, 1,000+ page views **Feb 2020**  
*Beating the Odds: Machine Learning for Horse Racing*, 13,000+ page views **Dec 2019**  
*Trading with Reinforcement Learning*, 6,000+ page views **Jun 2019**

PROGRAMMING EXPERIENCE *Languages:* Python, C, C++, Rust, HTML, CSS, Javascript, Java,  $\LaTeX$   
*Server Technology:* Distributed Compute, Docker, PostgreSQL, AWS, Jupyter Notebook, ROS  
*Libraries:* PyTorch, Tensorflow, Scikit-learn, Flask, D3