

# Matthew Ciolino

Data Scientist | [mrciolino@alum.lehigh.edu](mailto:mrciolino@alum.lehigh.edu) | [Portfolio](#) | 908-967-0559

## EXPERIENCE

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### Data Scientist

Nov 2020 – Present

*PeopleTec*

*Remote*

- Led research efforts in the application of deep learning algorithms to satellite imagery for Object Detection, Natural Language Processing, Adversarial AI, Dataset Creation, and other Computer Vision Tasks
- Trained low data quantized aware networks (TinyML) for object detection to detect rare objects at 75% mAP
- Created novel All Planes Dataset: a large (24,785 instances), hierarchical, multi-format (OBB/HBB), multi-resolution dataset (.1m to .5m) with imagery from Google, Mapbox, and Bing
- Presented research at National and International Machine Learning Conferences (AI4I, NIAI, NFCS)
  - \* Training Set Effect on Super Resolution for Automated Target Recognition ([SPIE](#))
  - \* Fortify Machine Learning Production Systems: Detect and Classify Adversarial Attacks ([ICMLA](#))
  - \* Soft Labels for Rapid Satellite Object Detection ([ICAIT](#))

### Machine Learning Engineer

Nov 2019 – Nov 2020

*PeopleTec*

*Huntsville, AL*

- Developed Super-Resolution framework that increased precision (mAP) for various computer vision tasks by 15%
- Cleaned helicopter maintenance logs using a bootstrapped hierarchical work unit code classifier to correct over 300k misclassified maintenance events for the 160th Special Operations Aviation Regiment
- Implemented Gradient Boosting to provide real-time results 2000x faster at  $R^2$  of .97 for PEELS Lethality Sim

### Junior Engineer

Nov 2018 – Nov 2019

*PeopleTec*

*Huntsville, AL*

- Developed fast, physics-based models for predicting damage and response of threat systems due to missile collisions
- Maintained and wrote efficient C++ and Fortran code for Parametric Endo/Exothermic Lethality Simulation (PEELS) using version control and coding guidelines to increase accuracy by 12% (Validation on Linux/Windows)

## PROJECTS

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### xEval Legislation Alerts

Dec 2020 – Jan 2022

- Established both UI/Frontend (Node/Bootstrap) design and Data Science (recommendations) microservices
- Scraped and analyzed over 455k bills into a SQL database to provide over 125 customers with 13k daily alerts
- Deployed production in AWS EC2 and Lambda, Version control in Git, Workflow in Clubhouse/Slack

### Soterra: Women's Safety XPRIZE

Jan 2017 – May 2018

- Led design of 1<sup>st</sup> mesh networking (IOT) commercial electronic device (C++) for women's safety device industry
- Directed creation of mechanical (SolidWorks) and electrical (PCB) documentation for production of our device

## EDUCATION

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### Georgia Institute of Technology

Atlanta, GA

*Master of Science in Computer Science, Computational Perception and Robotics*

*Aug 2020 – May 2024*

### Lehigh University

Bethlehem, PA

*Bachelor of Science in Mechanical Engineering, Minor in Aerospace Engineering*

*Jan. 2015 – May 2018*

## TECHNICAL SKILLS

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**Languages:** Python, JavaScript, C#, HTML, CSS, C++, SQL

**Frameworks:** TensorFlow, PyTorch, NumPy, Pandas, Node, React, Bootstrap

**Developer Tools:** Git, Docker, Anaconda, AWS, Unity, Visual Studio Code, Hugging Face, OpenAI

**Processes:** Agile, CICD