

# Taylor Faucett

Senior Machine Learning Engineer / Physicist

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## Professional Summary

Senior Machine Learning Engineer and physicist specializing in computer vision, 3D spatial data, and robotics applications. Build research-grade models and infrastructure that carry ideas from exploratory analysis to reliable, real-time deployment on robotic hardware, owning the full pipeline from data generation through model design, evaluation, and edge deployment. Combine an academic background in machine learning for high-energy physics with industry experience to deliver interpretable, production-ready systems for complex, sensor-rich environments.

## Education

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|-------------|-----------------------------------------------------------------------------------------------------------|
| 2015 - 2021 | <b>University of California, Irvine</b> , Irvine, CA<br><i>Ph.D. in Physics</i>                           |
| 2011 - 2015 | <b>University of Hawaii, Manoa</b> , Honolulu, HI<br><i>M.S. in Physics</i>                               |
| 2005 - 2009 | <b>Westminster College</b> , Salt Lake City, UT<br><i>B.S. in Physics, Minor in Mathematics and Music</i> |

## Professional Experience

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| 06/2022 - Present | <b>Machina Labs</b><br><i>Senior Machine Learning Engineer</i> <ul style="list-style-type: none"><li>- Lead end-to-end ML for industrial robotic sheet-metal forming, from data collection and labeling to model design, evaluation, and deployment on edge devices.</li><li>- Develop real-time models for anomaly detection, process control, and trajectory planning using time-series and 3D sensor data.</li><li>- Design data and experimentation infrastructure (data warehousing, ETL, metrics, dashboards) to support rapid iteration and robust monitoring of ML systems in production.</li><li>- Collaborate with robotics, controls, and software teams to integrate ML into safety-critical systems, including CI/CD and infrastructure-as-code for on-prem hardware.</li></ul>                                                                                                                   |
| 06/2015 - 06/2022 | <b>University of California, Irvine</b><br><i>Graduate Research Assistant &amp; Postdoctoral Researcher</i> <ul style="list-style-type: none"><li>- Researched deep learning and computer vision methods for particle-physics detectors, focusing on robust classification, reconstruction, and anomaly detection under real-world constraints.</li><li>- Developed techniques for interpreting ML models and relating learned features to underlying physical mechanisms, improving trust and scientific insight.</li><li>- Built end-to-end ML pipelines for large simulated and experimental datasets, covering data generation, preprocessing, feature engineering, model design, hyperparameter optimization, and uncertainty-aware evaluation.</li><li>- Collaborated across international experimental collaborations and communicated ML results to both domain experts and non-specialists.</li></ul> |
| 08/2011 - 05/2015 | <b>University of Hawaii, Manoa</b><br><i>Graduate Research Assistant</i> <ul style="list-style-type: none"><li>- Designed and implemented numerical simulations of Bose-Einstein condensates for a DoD-funded lattice-gas quantum computing experiment, bridging physics models and high-performance code.</li><li>- Integrated analysis and trigger software with FPGA-based readout for a neutrino telescope, working across hardware, firmware, and scientific analysis teams.</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 09/2009 - 05/2011 | <b>Northrop Grumman Aerospace</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |

### *Systems Engineer*

- Designed and deployed secure precision-time (PTP) radio networks for U.S. Air Force installations, focusing on reliability, timing accuracy, and security.
- Served as primary point of contact for network operations and reliability, tracking performance metrics and coordinating fixes with Air Force stakeholders.
- Held an active Secret security clearance.

## Publications

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1. Faucett, T., Hsu, SC. & Whiteson, D. Learning to identify semi-visible jets. J. High Energ. Phys. 2022, 132 (2022). [https://doi.org/10.1007/JHEP12\(2022\)132](https://doi.org/10.1007/JHEP12(2022)132)
2. Faucett, T., Thaler, J., Whiteson, D. Mapping machine-learned physics into a human-readable space. Phys. Rev. D 103, 036020 (2021). <https://doi.org/10.1103/PhysRevD.103.036020>
3. Collado, J., Faucett, T., Witkowski, E. et al. Learning to isolate muons. J. High Energ. Phys. 2021, 200 (2021). [https://doi.org/10.1007/JHEP10\(2021\)200](https://doi.org/10.1007/JHEP10(2021)200)
4. Collado, J., Faucett, T., Howard, J. et al. Learning to identify electrons. Phys. Rev. D 103, 116028 (2021). <https://doi.org/10.1103/PhysRevD.103.116028>
5. Baldi, P., Cranmer, K., Faucett, T. et al. Parameterized neural networks for high-energy physics. Eur. Phys. J. C 76, 235 (2016). <https://doi.org/10.1140/epjc/s10052-016-4099-4>

## Honors & Awards

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| 2020      | <b>Chateaubriand Fellowship</b> , Chateaubriand Fellowship<br>Prestigious fellowship awarded by the French Embassy to support research in machine learning and AI at a leading French institution.                                                     |
| 2016-2018 | <b>NRT-DESE: Team Science for Integrative Graduate Training in Data Science and Physical Science</b> , National Science Foundation<br>2 year NSF research grant for work in the interdisciplinary field of machine learning and the physical sciences. |