Christopher J. Lombardi

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SUMMARY

Recent Applied Physics and Computer Science graduate with hands-on experience building Python-based software and machine learning pipelines for scientific and real-world applications. Strong foundation in data structures, statistical modeling, and software development, with experience in computer vision, data analysis, and research-driven projects. Seeking an entry-level software engineering, data science, or machine learning roles.

SKILLS

Programming Languages: Python, C, Java, C++, SQL

Machine Learning & Data Science: TensorFlow, Keras, Pytorch, Scikit-learn, XGBoost, Pandas, NumPy, MLFlow

Visualization & Tools: Matplotlib, Seaborn, Prometheus, Grafana

Software & DevOps: Git, GitHub, Jupyter, Linux, Windows, Bash, VS Code, Vue, AWS, FastAPI, Flask

EXPERIENCE

Thorlabs Vytran Division - Machine Learning Engineer — Morganville, NJ — May 2025 – Aug 2025

- Built an end-to-end machine learning pipeline with TensorFlow to classify fiber cleave images and predict optimal cleave parameters for 5 optical fiber types.
- Achieved over 90% accuracy and an F1 score of 0.88 using a custom CNN with an EfficientNet backbone.
- Developed an XGBoost regression model to recommend tension adjustments with under 5% error.
- Improved data collection and preprocessing pipelines to enhance downstream model reliability.

ISWS REU Program - Research Intern — Newark, NJ — May 2024 – July 2024

- Selected as one of 8 students for a competitive NSF-funded astrophysics research program.
- Developed Python pipelines to process and analyze time-series stellar data for asteroseismology.
- Produced a first-authored paper submitted to an AAS journal.

New Jersey Institute of Technology - Research Assistant — Newark, NJ — Aug 2023 – Present

- Processed 39 Kepler light curves to identify and characterize 20+ stellar flare events, enabling precise asteroseismic frequency analysis at microhertz-level resolution
- Presented findings at the URI Symposium and Cool Stars 22 Conference
- Selected as finalist in the Dana Knox Competition - top 5% of participants

PROJECTS

Portfolio Website — christopherjlombardi.com

- Built and deployed a Flask web app with responsive UI using HTML, CSS, and Bootstrap.
- Integrated Prometheus and Grafana dashboards to monitor site performance.

FOCAL - Fiber Optic Cleave Analyzer and Learner — focal.readthedocs.io

- Designed and implemented a Python based machine-learning pipeline to automatically correct fiber optic cleaves using image analysis, complete with a CLI for monitoring model outputs.

PRESENTATIONS AND PUBLICATIONS

Temporal Variations in Asteroseismic Frequencies of KIC 6106415: Insights from GOLF and Kepler Observations — arxiv.org/abs/2503.05076

- Applied data cleaning and signal processing techniques to analyze 4 years of *Kepler* light curves, achieving oscillation frequency measurements within microhertz level precision

Understanding the Sun's Magnetic Cycle with COFFIES, AAS Meeting — Jan 2025

EDUCATION

B.S. **New Jersey Institute of Technology** - Applied Physics and Computer Science — Aug 2023 - Dec 2025

- Cumulative GPA: 3.89/4.0 - *summa cum laude*
- Relevant Coursework: Data Structures and Algorithms, Programming Language Concepts, Intensive Programming in Linux, Computer Systems, Database Design, Linear Algebra

A.S. **Essex County College** - Physics — Sep 2022 - Aug 2023

- Cumulative GPA: 4.0/4.0

HONORS AND AWARDS

Undergraduate Student of the Year, NJIT Department of Physics — Spring 2025