

# Patrick Lehman

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## EDUCATION

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### University of Florida

Gainesville, FL

*Bachelor of Science in **Computer Engineering**, Minor in **Biology***

*August 2020 - December 2024*

### Notable Coursework

*Software:* Machine Learning Fundamentals, Signals and Systems, Data Structures and Algorithms, Computational Linear Algebra, Natural Language Processing, Operating Systems

*Hardware:* Digital Design, Digital Logic and Systems, Microprocessor Applications

## EXPERIENCE

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### Machine Learning Engineer Intern

Mar. 2024 – Aug. 2024

*Ford Motor Company*

*Dearborn, MI*

- Analyzed global analytics on plant efficiency and vehicle warranty usage to derive models for car defect forecasting and determine metrics of focus
- Discovered improperly calculated metrics by experimentally determining their lack of utility and successfully endorsed their replacement.
- Helped discover new metrics that more accurately determine warranty expenditure and vehicle defect rates

### Algorithm Engineering Intern

May 2023 – August 2023

*Neurava*

*Baltimore, MD*

- Improved feature information capture by 358% through the automated calculation of energy-entropy ratio for various wavelets
- Analyzed biological signals using Continuous Transformers, Decision Trees and Wavelet Transforms
- Automated the discovery of new and efficient epilepsy detection algorithms by developing a feature extraction and model validation pipeline

### Machine Learning Research Intern

Nov. 2022 – April 2023

*Fire Neural Network*

*Gainesville, FL*

- Utilized Pytorch Lightning and Weights and Biases to produce an automated pipeline that experimentally determined the best hyperparameters for a Vision Transformer used for image segmentation
- Produced internal tools for associating satellite images with related geoJSON data to produce files compatible with common mapping software, e.g. ArcGIS, QGIS
- Optimized model inference, increasing model throughput 4.5x

### Researcher

Jun. 2022 – Dec. 2022

*University of Florida Interactive Visualization and 3D Graphics Lab (SurfLab)*

*Gainesville, FL*

- Trained and tested various segmentation models, including Vision Transformers and 3D UNet's on medical imagery
- Employed Lightning AI on the University of Florida hypercomputer to train models on a distributed system of GPUs

### Researcher

Mar. 2022 – Jul. 2023

*University of Florida Natural Language Processing Lab*

*Gainesville, FL*

- Produced a pipeline combining elements of BART, Llama2 and keyword extraction to produce document vectors which were then associated with abstractive summaries and sentiment ratings to yield a graph of topic-sentiment clusters with interpretable titles.
- Researched heuristic methods of sentiment detection towards topics/subjects of sentences, rather than overall sentiment - termed "stance detection"

## PROJECTS

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### Educatus | NextJS Web app for providing study/research utilities to students

Oct. 2022 - Oct. 2022

- Utilized the OpenAI API in conjunction with various task-specific models (BART, BERT, etc) to provide scholastic tools to students via a web app
- Functionality included: text summarization, automated text rephrasing for audiences of different technical levels, automatic quiz generation, Named Entity Recognition/definition and more

## EXTRACURRICULARS

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**Clubs:** AI Research and Development Club (Technical Lead), UF Programming Club

**Competitions:** SwampHacks VIII (Winner), Work of Art Hacks (Winner), UF ASA Datafest (Winner), UF AI Days (Honorable Mention), Georgia Tech RoboTech