# Nicholas R. Pucci

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## Education:

**The University of Alabama** | *Bachelor of Science in Computer Science* | Tuscaloosa, AL | Fall 2025
*Minor in Mathematics* | GPA: 3.6 / 4.0 | Dean's List: Fall 2024, Spring 2024, Spring 2022
Relevant Courses: Artificial Intelligence, Web Development, DBMS, DSA, Theory of Probability, Calculus III, Linear Algebra

## Technical Skills:

Languages & Frameworks: Python, C++, C#, MATLAB, SQL, Java, HTML, CSS, JavaScript, Groovy, Assembly

AI/ML Tools: Scikit-Learn, Matplotlib, Pandas, Numpy, Gaussian Mixture Models (GMM), ChatGPT API, Jupyter Notebook

Development Tools: Git/GitHub, Docker, Jenkins CI/CD, Robot Framework, ASP.NET MVC, Azure Web Services, Unity

Systems & Databases: Linux, Windows, MongoDB, Oracle SQL Developer, SAP, Tableau

## Professional Experience

**Data Science Intern | Celanese | Pasadena, TX | 3 months**
Digital Manufacturing Team: Full Stack Development & Data Science | May 2025- August 2025
- ❖ Developed an automated work order classifier using BERT and NLP techniques to categorize rotating equipment failures across 7,000+ SAP work orders; achieved 74.3% accuracy reducing manual classification time by 3 days for reliability engineers.
- ❖ Performed data engineering and EDA on work order datasets, addressing class imbalances via a multiclass model with 10 labels and enhanced text concatenation for improved BERT training.
- ❖ Led planning and design of a full-stack app to aggregate single point of failure (SPOF) data for out-of-service equipment using Cognite; conducted global stakeholder reviews, feature-engineered solutions, presented mockups, and prototyped an MVP in Streamlit.
- ❖ Co-led Celanese's STEAM Day digital booth, building a Python/Tkinter AI Bingo game to educate 60+ kids (ages 5-12) on AI datasets and training

**Software Engineer Co-op | Adtran Inc. | Huntsville, AL | 1+ year**
Development Team: Software Engineering & Feature Implementation | May 2024 - August 2024
- ❖ Added new features to Python scripts that allowed the ability to create mock Optical Network Unit (ONU) IDs on cable software-defined optical line terminals (SDX OLTs) facilitating debugging processes.
- ❖ Developed CLI commands and controller functions for the OLT in Adtran-specific C++ packages, helping to identify which ONUs are malfunctioning and ensure stable ONU-to-OLT connections.

Systems Team: Hybrid Role, OLT Infrastructure & CI/CD Management | August 2023 - December 2023
- ❖ Designed and modified Python programs to identify missing traffic flows not being received by ONUs in testing. Automated test execution with Robot Framework on newer versions of Python scripts in testbed environments consisting of various OLT models.
- ❖ Created a Jenkins tool to facilitate the testing of git pull requests by automatically verifying and testing changes in the CI pipeline, reducing manual testing cycles, and improving deployment efficiency.
- ❖ Configured a Raspberry Pi to interface with OLT testbeds, simultaneously enabling remote management of multiple OLTs.

Testing Team: DVT – Design Verification & Testing | January 2023 – May 2023
- ❖ Conducted unit testing with Python and C on SDX OLTs and Mosaic Cloud Platform, resolving hardware/software issues.
- ❖ Created customer-tailored Python help commands, improving the usability of Adtran tools.

## Projects:

**Supervised Learning (Polynomial + Ridge Regression Analysis**): Python | Spring 2025
- ❖ Analyzed datasets to select polynomial and ridge regression as the optimal method based on data distribution and feature relationships. Implemented in Python with scikit-learn to predict continuous outcomes, evaluating model fit with analysis on training/test splits.
- ❖ Visualized results with matplotlib to assess performance, utilizing data-driven decision-making and experimental analysis skills.

**Unsupervised Learning (Gaussian Mixture Models):** MATLAB | Spring 2025
- ❖ Applied GMM in MATLAB to cluster two datasets, determining optimal cluster counts using Bayesian Information Criterion (BIC)
- ❖ Estimated means, covariances, and mixing proportions, identifying repeated clusters across datasets despite covariance differences.
- ❖ Visualized non-spherical clusters with ellipses, showcasing probabilistic modeling and analytical skills.

**AI-Driven Social Media Simulator**: Azure, ASP.NET MVC, ChatGPT API | Fall 2024
- ❖ Built a web app with ChatGPT API for AI-generated social media comments, performing real-time sentiment analysis using VADER. Leveraged SQL database with dynamic relationships for data manipulation and organizational skills.

**Adtran-Themed 2D Unity Game**: C#, Unity | Fall 2023
- ❖ Led a team to design a C# based game with dynamic enemy AI. Won 1st place in the company-wide hackathon.

## Other Experience:

**Student Teaching Assistant**: August 2024 – December 2024 | *University of Alabama* | Tuscaloosa, AL
- ❖ Entrusted by the professor to lecture for the Computer Science 201 lab section on the principles of data structures and algorithms; designed PowerPoints with weekly quizzes to accompany.
- ❖ Assisted students both during and out of office hours who needed more in-depth explanations of concepts or C++ programming assignments.

**Owner**: June 2018 – 2020 | *Nick's Power Washing* | Cumming, GA
- ❖ Managed a small business, developing leadership, time management, and client relations skills with over 50 customers.