

# Miguel Angel Lopez

(571) 351-0661 | [miguellpz@vt.edu](mailto:miguellpz@vt.edu) | [personal website](#) | [linkedin](#)

## EDUCATION

### Virginia Tech

*Masters of Engineering in Computer Science*

Blacksburg, VA

*Expected – May 2026*

- **GPA:** 3.76/4.00
- **Relevant Coursework:** Machine Learning, Data and Algorithm Analysis, Database Management Systems, Ethics & Professionalism in CS

*Bachelor of Science in Computer Science*

*Graduating – May 2025*

- **In Major GPA:** 3.60/4.00
- **Dean's List:** Fall 2021, Spring 2023, Fall 2023, Spring 2024, Fall 2025
- **Relevant Coursework:** Data Structures and Algorithm, Computer Organization, Computer Systems, Mobile Development

## EXPERIENCE

### REU Code Theory and AI Research Fellowship

June 2024 – Aug. 2024

*University of Puerto Rico at Ponce*

*Ponce, PR*

- Was a speaker at prestigious math and AI conference JMM (Joint Mathematics Meetings)
- Developed a novel BCH syndrome-based belief propagation decoder achieving 0.0086 BER on 2M+ bits
- Created ML models for Puerto Rican wildlife classification using CNN and Wav2Vec transformer architectures
- Implemented biodiversity assessment tools using MFCCs and clustering algorithms

### Code Theory Research Assistant Fellowship

Oct. 2023 – May 2024

*Virginia Tech Math Department*

*Blacksburg, VA*

- Led programming efforts using Magma to analyze matrix tensor rank in finite fields
- Researched generalization methods for determining tensor rank of matrices
- Automated testing procedures for matrix analysis in finite field computations

## PROJECTS

### Wildlife Call Database | *MariaDB, Python, SQL*

Aug. 2024 – Present

- Leading GUI development and database connectivity for a wildlife sound repository system
- Designing normalized database schema for managing audio files and taxonomic data
- Implementing user authentication and CRUD operations for audio file management

### Bio-Classifer & Biodiversity Assessment | *Python, TensorFlow, Signal Processing*

June 2024 – Aug. 2024

- Developed ML models using CNNs and Wav2Vec transformers to classify 300+ Puerto Rican species
- Created biodiversity assessment tools using MFCCs and clustering algorithms for Simpson Biodiversity Index
- Led conservation efforts through automated species identification with high classification accuracy

### BCH Syndrome-Based BP Decoder | *Python, Error Correction*

June 2024 – Aug. 2024

- Implemented novel error correction decoder combining BCH codes with belief propagation algorithms
- Integrated syndrome computation with belief propagation achieving 0.0086 BER on 2M+ bits in 9.9 seconds
- Enhanced communication system reliability through improved error detection and correction methods

### Pet Neurolocalization App | *Flutter, Dart*

Jan. 2024 – Jun. 2024

- Leading development of cross-platform medical application with VT Veterinary Department
- Implementing fuzzy decision tree algorithms for veterinary diagnostics
- Managing communication between development team and veterinary stakeholders

### Tutor Time App | *Android, Java*

Nov. 2023 – Dec. 2023

- Developing tutoring platform using Android's ViewModel and LiveData architecture
- Implementing efficient navigation patterns with nav\_graph for fragment management
- Leading development using GitHub for version control and team collaboration

## TECHNICAL SKILLS

**Languages:** Java, Kotlin, SQL, Python, C, Dart, HTML/CSS

**Technologies:** TensorFlow, Flutter, Android SDK, MariaDB, Git

**Concepts:** Machine Learning, Mobile Development, Database Design, Error Correction Coding