# Miguel Angel Lopez

(571) 351-0661 | miguellpz@vt.edu | personal website | linkedin

## EDUCATION

**Virginia Tech**                                                                                                          Blacksburg, VA
*Masters of Engineering in Computer Science*                                               *Expected – May 2026*
- **GPA:** 3.76
- **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
- **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 prestigous 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-Classifier & 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