

NICHOLAS A. HERNANDEZ

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EDUCATION

Georgia Institute of Technology

Atlanta, GA

Master of Science in Computer Science — Computational Perception and Robotics

Fall 2026 - Expected 2028

Boston College, Morrissey College of Arts and Sciences

Chestnut Hill, MA

Bachelor of Science in Computer Science

Fall 2022 - Spring 2026

- GPA: 3.91 | Summa Cum Laude | Phi Beta Kappa | Alpha Sigma Nu
- Relevant Coursework: Machine Learning, Robotics, NLP, Algorithms, Linear Algebra, Probability

SKILLS

Programming Languages: Python, Java

ML & Robotics: PyTorch, Hugging Face, scikit-learn, NumPy, Pandas, OpenCV, ROS2

Tools: Git/GitHub, SLURM, Linux/Unix, Jupyter

RESEARCH EXPERIENCE

Boston College

Chestnut Hill, MA

Research Assistant, advised by Dr. Emily Prud'hommeaux

Summer 2025 - Spring 2026

Senior Honors Thesis: Cross-Linguistic Transfer Learning for Machine Translation

Fall 2025 - Spring 2026

- Fine-tuned NLLB-200-distilled-600M for bidirectional machine translation across 14 Formosan languages; designed four transfer-learning pipelines comparing single- vs. two-stage training and supplementary-language selection by linguistic similarity, corpus size, and language family.
- Found two-stage supplementary fine-tuning consistently outperformed single-stage training; pooling the three highest-resource Formosan languages produced the strongest overall pipeline, improving all evaluated targets bidirectionally and boosting FOR→EN BLEU by 50–79% for the four lowest-resource languages.

NSF REU: Automatic Speech Recognition for Endangered Languages

Summer 2025

- Studied donor selection for transfer under data scarcity, automating 80+ Wav2Vec2/XLSR-53 fine-tuning runs across donor-target pairs for 13 languages via parameterized SLURM job scripts
- Applied cross-linguistic similarity metrics (e.g., Token Overlap) to guide donor selection, reducing Word Error Rate (WER) by up to 68%
- Found that unrelated-language transfer can outperform both related-language transfer and additional in-language data, contradicting standard practice in low-resource ASR

University of Houston

Houston, TX

NSF REU Researcher, advised by Dr. Rakesh Verma

Summer 2024

- Conducted multilingual toxicity-detection experiments with XLM-RoBERTa to study zero-shot and cross-lingual transfer across Romance languages
- Built a Romance-language toxicity dataset by sourcing, cleaning, and combining public datasets, producing 85,000+ examples for binary classification

PUBLICATIONS

- Prud'hommeaux, E., Scheppat, H., **Hernandez, N.**, & Le Ferrand, E. "A Family Affair: Counterintuitive Transfer Effects in ASR for Endangered Languages." EMNLP 2026 Main Conference. Accepted.

PROJECTS

Robot Car Soccer System

Spring 2026

- Built a real-time OpenCV perception pipeline for robot car soccer using HSV thresholding and contour-based ball detection
- Added robust goal/out-of-bounds detection and an interactive calibration tool for changing lighting; integrated tracked events with a Python game-state system and Pygame scoreboard

MicroRTS Hybrid Reinforcement Learning Agent

Spring 2025

- Built a hybrid agent combining tree-search planning with a PPO-based control model for the MicroRTS real-time strategy environment, balancing economic development against relative military strength
- Achieved a TrueSkill rating of 33.7, outperforming the CoacAI baseline agent (33.4)

VOLUNTEER & LEADERSHIP EXPERIENCE

John M Barry Boys and Girls Club STEM Center

Chestnut Hill, MA

- Taught 10 hrs/week; designed daily exercises and gave Spanish-language instruction for non-English speakers

President of the Cuban American Student Association

Chestnut Hill, MA

- Organized 10–15 culturally enriching events per semester for 400+ members with the Office of Student Involvement and campus clubs