Bogotá, Colombia
julietoc@unal.edu.co

Juliana Nieto Cárdenas

GitHub: junietoc
LinkedIn:
juliana-nieto-cardenas

PROFESSIONAL SUMMARY

Research-oriented Computer Science student combining high-performance systems engineering (C++, Distributed Systems) with a passion for **Human-Centered AI**. Experienced in designing evaluation pipelines for educational tools and optimizing large-scale infrastructure. Seeking to leverage a strong technical background in algorithms to develop more inclusive, accessible, and robust **Language Technologies**.

RESEARCH EXPERIENCE

Graph Representation Learning Research   **Sep 2025 – Present**
Undergraduate Research Project   *Universidad Nacional de Colombia*

- Investigating the **oversquashing phenomenon** in Graph Neural Networks (GNNs) using the **CLRS-30 algorithmic benchmark**.
- Implementing expander graph augmentations (Cayley Graph Propagation) to improve long-range interaction modeling in geometric deep learning architectures.

Educational Technology & Human-AI Interaction   **Aug 2024 – Feb 2025**
Research Internship   *Purdue University*
Mentors: Prof. Andrés Bejarano, Ethan Dickey

- Developed **Owlgorithm**, an intelligent tutoring system designed to scale high-quality feedback for introductory programming classes, focusing on pedagogical alignment (Bloom's Taxonomy).
- Engineered a Python-based feedback loop that generates adaptive hints and rubric scoring to support student self-reflection.
- **Impact:** Pilot study with UTAs showed **50% of system-generated feedback was rated high-quality**, demonstrating the potential for AI-assisted tools to make CS education more inclusive and accessible.

EDUCATION

B.S. in Computer Science   **Expected June 2026**
Universidad Nacional de Colombia   *GPA: 4.3/5.0 (Top 10% of Class)*

- **Relevant Coursework:** Advanced Algorithms, Machine Learning.
- **Interdisciplinary Electives:**
- **Honors:** Fully funded tuition (2020) (Awarded for academic excellence)

RESEARCH INTERESTS

- **Graph Representation Learning:** Investigating geometric deep learning and structural reasoning (Oversquashing/Over-smoothing).
- **Knowledge-Enhanced NLP:** Applying Graph Neural Networks to improve reasoning, factuality, and interpretability in Language Models.
- **Human-Centered AI:** Developing transparent and adaptive AI systems for education and social impact.

SKILLS

Programming Languages	**Python** (Advanced), **C++** (High-Performance), Java, SQL
Machine Learning & Math	**Graph Representation Learning (GNNs)**, Geometric Deep Learning, **PyTorch**, Linear Algebra, Probability & Statistics, Algorithmic Reasoning (CLRS-30)
Systems & Software Eng.	Distributed Systems (AWS EC2/Lambda), Docker, Linux, Git, **CI/CD & Unit Testing** (pytest), Code Refactoring