

# MARTIM GASPAR

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## Education

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### University of North Carolina at Chapel Hill

August 2025 - May 2030

*Ph.D. in Computer Science, Focus in Brain-Computer Interfaces*

*Chapel Hill, NC*

**Advisor:** Prof. Raghavendra Pradyumna Pothukuchi

**Relevant Coursework:** VLSI Digital Design Flow using Cadence tools at Duke, UVVM Verification with Siemens tools at NCSU, Compilers, Brain-Computer Interface Architecture

### University of North Carolina at Chapel Hill

August 2021 - May 2025

*B.S. in Computer Science, Minor in Applied Science and Engineering - 3.7 / 4.0*

*Chapel Hill, NC*

**Relevant Coursework:** Digital Integrated Circuits, Sensors and Electrical Circuits, Digital Logic and Design, Computer Architecture, Models of Languages and Computation, Computational Imaging and Displays, Operating Systems

## Honors and Awards

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IEEE VR Best Paper Honorable Mention

2025

Phi Beta Kappa

2024

Novozymes Scholarship

2022

Deans List

2020-2025

## Publications

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### Multimodal Neural Acoustic Fields for Immersive Mixed Reality

2025

*Guansen Tong, Johnathan Chi-Ho Leung, Xi Peng, Haosheng Shi, Liujie Zheng, Shengze Wang, Arryn Carlos O'Brien, Ashley Paula-Ann Neall, Grace Fei, Martim Gaspar, Praneeth Chakravarthula*

**Awards:** IEEE VR Best Paper Honorable Mention

## Research Experience

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### UNC Brain-Computer Interfaces Lab | *Python, MATLAB, Verilog*

May 2025 – Present

*Graduate Research Assistant, Advisor: Prof. Raghavendra Pradyumna Pothukuchi*

*Chapel Hill, NC*

- Early design space exploration toward tapeout of a bci processor capable of running multiple neural signal processing pipelines (seizure detection, movement and speech intent), to reduce latency and enable testing for neuroscientists
- Presented and demoed novel BCI hardware/software co-design tool at the IEEE EMBC 2025, engaging with an international audience of clinicians, engineers, and neuroscientists
- Attended 2025 CCC Visioning Workshop on Brain-Computer Interfaces

### UNC Hardware Security Lab | *Python, Verilog*

August 2024 – May 2025

*Research Assistant, Advisor: Prof. Cynthia Sturton*

*Chapel Hill, NC*

- Upgraded SEIF (Symbolic Execution for Information Flow), a **Verilog** verification engine for static analysis of hardware
- Optimized preprocessing performance by compiling timing analysis data to refine the path-finding process, and implemented a pipelining mechanism, resulting in up to a **57%** reduction in overall latency

### UNC Graphics Lab | *Python, OpenCV, Tensorflow*

October 2023 – January 2025

*Research Assistant, Advisor: Prof. Praneeth Chakravarthula*

*Chapel Hill, NC*

- Created **AR/VR** demo using **Unity** and Steam Audio plugin, leading to an IEEE VR Best Paper Honorable Mention
- Engineered prototype for selective noise-canceling **AR** glasses using **Teensy** development board and microphone arrays
- Implemented **SLAM**-based algorithms with **LIDAR** for object detection and six degrees of freedom tracking

## Industry Experience

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### UNC Department of Computer Science | *C, MIPS*

August 2024 – May 2025

*Undergraduate Teaching Assistant*

*Chapel Hill, NC*

- Mentored a cohort of **33** students in systems fundamentals, with a resulting **92%** average grade across the cohort

### Infosys iCETS | *Java, Kotlin, Figma, Azure*

May 2024 – August 2024

*Software Engineering Intern*

*Raleigh, NC*

- Developed an LLM-powered concierge application for the Temi V3 robot by integrating **GPT-4** with Temi's API and implementing core features in **Java** and **Kotlin**; showcased to Fortune 500 companies, driving **\$100K+** revenue
- Presented demos to Western Union CTO, showcasing **AI** and **VR** retail solutions, successfully leading to a partnership

## Technical Skills

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**Languages:** Java, Python, C++/C#/C, Matlab, Verilog, SQL, HTML/CSS, Javascript, Swift/SwiftUI, Go

**Technologies:** Cadence Virtuoso, Vivado, Calibre, TensorFlow, Siemens Questa, Linux, Microcontrollers, Arduino