# Catherine YANG

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## Education

| **Duke University, Durham NC** | **Expected May 2027** |
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Double Major in Biomedical Engineering + Electrical and Computer Engineering          Major GPA: 3.71

Relevant Coursework: Microelectronics, Fields and Waves, Signals and Systems, Computer Architecture, Operating Systems, Data Structures and Algorithms, Electrical Engineering Design, Electricity & Magnetism, Engineering Design, Ordinary and Partial Differential Equations, Probability for Computer Engineers (Graduate level)

## Technical Skills

**Frameworks**:          .NET, PyTorch, Transformer, React.js
**Developer Tools**:          Git, MySQL, PostgreSQL
**Software**:          MATLAB, AutoCAD, Figma, Mathematica, Fusion 360, Ansys Fluent, Maya
**Technologies**:          Research, Database, Server Management, API Development, OAuth, NLP
**Languages**:          C/C++, C#, Java, Python, SQL, Javascript, HTML, CSS

## Project/Work Experience

**Duke Code+** | *Software Engineer Intern*                                                        May 2024 – Aug 2024

• Utilized .NET framework to develop a new website platform for Blue Devil Bridges mentorship program, incorporating OAuth authentication and managing databases.

• Collaborated with stakeholders to refine the intake workflow and enhance the mentor-mentee matching algorithm by implementing pre-trained natural language processing machine learning models for proximity factors and optimized variations of the Hungarian algorithm.

**IR Remote Project** | *Independent Project*                                                                Dec 2024

• Designed an IR remote control using a PIC18 microcontroller overclocked to 64 MHz (via external 16 MHz crystal and PLL) and created a custom PCB for USB-based programming.

• Leveraged an ADALM2000 logic analyzer to reverse-engineer Samsung and NEC protocols, developing a transmission library to replicate these IR signals.

• Implemented a band-pass filter and amplifier circuit paired with custom demodulation software, enabling real-time replication of various remote control signals.

**Duke Robotics Club** | *Electrical Subteam Member*                                        Sep 2023 – May 2024

• Collaborated with the Electrical team to design and implement circuitry for the sensing system of our autonomous underwater vehicle (AUV).

• Collaborated in system optimization initiatives, enhancing the efficiency and performance of our project for the RoboSub 2024 competition.

**Peer Mentoring Website** | *Project Leader*                                                        May 2023 – Aug 2023

• Guided a team to develop an academic resource website for A-Level students using a responsive React.js front-end.

• Designed and executed comprehensive test plans (unit, integration, end-to-end) to ensure robustness and reliability, employing continuous integration and deployment practices.

**Applied Mathematics Research** | *Research Assistant Under Prof. Kabala*          Aug 2022 - Dec 2022

• Designed and implemented Computational Fluid Dynamics (CFD) data models to analyze and digitize the turbulent kinetic energy using Mathematica and Ansys Fluent.

• Wrote a paper that has been nominated for publication in the pioneer journal (peer-reviewed).

## Volunteering

Algorithm developer and coder for DukeNY Blue Devils Beyond

## Activities

Active member of: Duke Hyperloop, Society of Women Engineers at Duke, DTech
Interests: Volleyball, Street Photography, Woodworking, Origami