# Bronson Ianno

## Links

**GitHub:** [bxi23](https://github.com/bxi23)

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Pittsburgh, PA

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### Education

The Pennsylvania State University – University Park

BS Computer Science 2023

GPA 3.86 Cum Laude

Minor in Computer Engineering

Minor in Mathematics

### Activities:

PSU Robotics Club 2019- 2021

HackPSU Organizer 2022- 2023

### Skills:

Python, Java, JavaScript, TypeScript, C, C++, SQL, HTML, CSS, MATLAB, C#

Frameworks:   
AWS Cloud, React, React Native, Django, .Net WPF, Asp.Net, Flask, Node.js, .Net 9

### Tools:

Figma, SolidWorks, Multisim, Postman, Insomnia

### Coursework:

Wireless Comms and Security

Linux System Programming

Circuits and Devices

Computer Vision

### Certifications:

AWS Cloud Practitioner

Meta Back-End Developer

Meta Front-End Developer

## **References**

~~Tom Kolb (412) 480-4059~~

~~John Choi, Research Engineer, Carnegie Mellon University, johnchoi@andrew.cmu.edu~~

~~Todd Joslin~~

~~Jeffrey Scott, CEO and Founder, IAMotion, jeff@iamotion.com~~

Work Experience:

**Automation Engineer @ IA Motion Products**| Murrysville, PA| Jan 2024 - Present

* Design and develop automation solutions based on customer requirements.
* Work with the development of software for motors and PLCs.
* Manage distribution of automation products.

**Software Engineering Intern @ Carnegie Robotics**| Pittsburgh, PA| Jan 2022–Aug 2022

* Assisted in design, development, and testing of robotics software applications
* Wrote OpenCV scripts in Python to assess camera systems for QR code reading
* Implemented feature enhancements to Robot Camera Payload system codebase

## Projects:

**Full Stack Fitness App** ***(Expo, .NET 9, MySQL, AWS, BLE IMU)***| Personal Study – Project

A connected fitness app featuring real-time sensor streaming, user-generated content, responsive cross-platform UI, and social interaction. Built with an **Expo** front-end and a .**NET 9** (**ASP.NET Core**) back-end using **MySQL**, with planned deployment to **AWS**.

* **App Development | Key Contributions**
  + Developed a cross-platform mobile app using **React Native + TypeScript** in **Expo**, with adaptive UI powered by **Tamagui** and responsive sizing techniques.
  + Designed a modular **JWT authentication system** supporting secure, stateless API interactions.
  + Engineered a scalable **state management architecture** using layered React Contexts for local/global control across tabs and components.
  + Integrated **.NET 9 RESTful API** with secure CRUD operations and persistent user data via **MySQL**.
  + Used **Axios, React Query, and RxJS** to enable efficient data fetching, live updates, and backend syncing.
  + Implemented dynamic, form-driven content using **Formik** and **Yup** with **modal**-based interaction patterns for seamless user input and validation.
  + Designed and prototyped UX flows in **Figma**, building a tabbed navigation system across five core app areas (Home, Workout, Planning, Community, Settings).
* **Back-End Development | Key Contributions**
  + Designed a scalable **MySQL** database schema using **Entity** **Framework** **Core**, supporting user authentication, profiles, workout planning, and activity tracking with flexibility for future platform migration.
  + Developed a **modular RESTful API** using the **ASP.NET Core MVC framework**, with multiple controllers handling categorized CRUD operations across the app’s core features.
  + Created structured **DTO models** to validate and sanitize incoming requests, ensuring consistent and secure data flow between client and server.
  + Integrated **Swagger UI middleware** to auto-generate API documentation and support streamlined developer testing and iteration.
* **Sensor Integration and Sensor Fusion | Key Contributions**
  + Calibrated **BLE IMU** sensor using **Python** with **WitMotion** **SDK** and **Bleak** for BLE connectivity, performing sensor fusion via **PyFilter** and **IMUFusion** to extract accurate orientation and motion data.
  + Built a controlled calibration environment using an **Animatics M5 Smart Motor** on a linear actuator to generate repeatable reference motion for fusion accuracy. Developed Smart Motor code using **Animatics SDE**.
  + **Reverse engineered Python-based calibration and fusion logic into TypeScript**, enabling native real-time motion analysis directly within the Expo app environment.

**Django-Based Web API System** | Personal Study

* Built **Back-End API** using **Django** to control database operations management
* Evaluated **REST** **API** using Insomnia **REST** client for performance and accuracy.
* Implemented user **authentication** system with **unit** **testing** for reliability

**Linux-Based OS Concepts - Design and Implementation** | University Study

* Designed and implemented core operating system functionalities using **C++.**
* Applied paging and memory replacement algorithms for data transfer integrity.
* Wrote a **multithreaded** CPU scheduler for synchronizing multiple **IO devices**.
* Built File System with pathname resolution, symbolic linking, nested directories, memory allocation of data blocks, and secure handling of name collision.

**Restaurant UI/UX Design and Development using React** | Personal Study

* Designed user-centric **UX/UI** design from wireframe to prototype using **Figma**
* Built a responsive web app using **React** to display menus and handle reservations
* Performed unit testing with **Jest**, validating functionality and user interactions.

(not done)

**Animatics Smart Motor SDK & Developer Tools (Python, VSCode Extension) |** Personnel Study

* Developed a VSCode extension integrated with low-level **DLLs** to deploy **firmware** and remotely control **Animatics** **Smart** **Motors** in real-time, supporting **SDE** operations and live motor commands.
* Built full language support in **VSCode** for a Python-style **transpiled firmware language**, including custom **TextMate** grammar, syntax highlighting, bracket matching, comment toggling, and file associations to improve developer experience.
* Developed **a Python library** for modular Smart Motor subroutines, a compiler for a **custom transpiled firmware language**, and tools for remote **firmware** runtime management.

(far in the past can’t find code should just redo this)

**Robotics Control Experimentation** **(C++, Arduino, Embedded Systems)** | Personnel Study

* Designed control system using **NEMA 17 stepper motors** and **stepper drivers** on a breadboard via **Arduino Uno**, writing **C++** programs to handle motor control and **I/O** **integration**.
* Connected and tested various I/O components (buttons, potentiometers, sensors) to create responsive motion control systems.
* Focused on developing foundations for future development with an **educational robotic arm system** developedby **Choi Tek**.
* Gained hands-on experience with **low-level hardware programming**, **motor driver tuning**, and **motion sequencing** for robotics applications.