DAVID CHENG

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EDUCATION

New York, NY	New York Institute of Technology	Sept 2017-May 2022

- **Major:** M.S. Electrical & Computer Engineering, GPA: 4.00/4.00 — Expected May 2022
  B.S. Electrical & Computer Engineering, GPA: 3.89/4.00 — Graduated May 2021
- **Degree Honors (Undergraduate):** *summa cum laude*, Presidential Honor List (2018-2021)
- **EE Coursework:** Microprocessors & Embedded Systems, Electrical Circuits, Electronics Lab I-IV, VLSI Design
- **CS Coursework:** Software Engineering, Operating Systems, Data Structures, Computer Architecture

WORK EXPERIENCE

Teaching Assistant	New York Institute of Technology	Sept 2021-Dec 2021

- Administered weekly tutoring sessions to *Signals and Systems* students to help keep them on track with course material and assignments.

PROJECTS

GitHub Portfolio Page: https://daviecheng.github.io/

Wearable Posture Corrector Device, *Self-Project*
- Developed a wearable device that notifies the user when they are slouching by integrating SEFR machine learning algorithm.
- Used I2C protocol to interface accelerometer sensor data with Arduino microcontroller in real-time.
- Extended device battery lifespan to 4 and ½ days by decreasing the system clock frequency.
- **Utilized:** C/C++, Python, MATLAB, Arduino, ATmega328 MCU, Multimeter, Soldering, Fusion 360

Automated Blinds, *Self-Project*
- Developed self-operating blinds that hourly adjusts to one of three positions by programming an ESP8266 microcontroller that checks the current weather and time of day through Wi-Fi.
- Used the OpenWeatherMap API to retrieve weather and time of day information by using Arduino JSON library.
- Established a low power state by integrating ESP8266 deep sleep mode with non-volatile memory.
- **Utilized:** C/C++, Arduino, ESP8266 Wi-Fi MCU, Fusion 360

Automatic Button Presser for Nintendo Switch, *Self-Project*
- Developed a circuit that simulates in-game actions by automating button presses on the Nintendo Switch Joycon.
- **Utilized:** C programming, Raspberry Pi Pico, Arm Cortex-M0+, GNU Arm Toolchain, CMake, VSCode

Autonomous Locking Knee Brace, *Senior Design Project*
- Developed an autonomous locking knee brace that locks the flexion on brace when user is falling by integrating Random Forest machine learning algorithm with two push-pull solenoids.
- Established a 94.5% fall detection accuracy for my movements using confusion matrix.
- **Utilized:** C/C++, Python, Arduino, MATLAB, ATmega2560 MCU

Wellness Website (Front-End), *School Group Project*
- Designed home and dashboard webpage using HTML, CSS, and JavaScript that allows users to easily navigate between the different features. Implemented with SDLC phases using agile scrum approach.
- **Utilized:** HTML/CSS, JavaScript, Bootstrap 5, VSCode, Git, GitLab, Lucidchart

SKILLS

- **Programming:** (proficient): C/C++, HTML, CSS, MATLAB   (familiar): Python, Java, JS, Assembly (8051)
- **Software:** VSCode, Keil uVision5, Arduino IDE, IAR Embedded Workbench, PyCharm, Git, Autodesk Fusion 360, Multisim, PSpice, MS Office