

# David Claffey

Atlanta, GA • 614.832.9603 • dclaffey@gatech.edu • linkedin.com/in/davidclaffeyv/

## EDUCATION

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### Georgia Institute of Technology – GPA: 3.9

- B.S. Mechanical Engineering
- Computer Science Minor, Intelligence and AI

Atlanta, Georgia

August 2020 – May 2024

## EXPERIENCE

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### Formlabs SLA Print Process R&D

Somerville, Massachusetts

SLA Print Process Next Gen R&D Intern

January – August 2023

- Designed and performed experiments studying polymerization dynamics, energy accumulation, optical stack design, new material chemistries, and various physical phenomena. Created algorithms optimizing print parameters and quality.
- Skills: Thermal Fluids, Optics, Proprietary Software Development, Adhesion models, SLA Theory

### GA-AIM / Beam Team Labs

Atlanta, Georgia

Artificially-Intelligent-Manufacturing Researcher - Advanced Manufacturing Pilot Facility

September 2022 – Current

- Conducting computer vision and advanced manufacturing research regarding the Optomec DED (Directed Energy Deposition) CNC. Using OpenCV to monitor argon gas flow rate for precise mass delivery of hopper materials to weld pool.
- Skills: Advanced Manufacturing, Computer Vision, Electromyography, Fluid Dynamics, Mechatronics.

### DART Labs

Atlanta, Georgia

Machine Learning and Bio-kinematics/kinetics Researcher

August 2021 – Current

- Developed an offline pipeline used in exoskeleton sensor EMG analysis and motion primitive segmentation/classification. Utilized variable feature sets, confusion matrix analysis, forward feature selection, hyperparameter tuning, and window tuning. Implemented online network to predict user-motion intent and inform actuation in dynamic environments.
- Skills: Temporal Convolutional Networks, XGBoost, WANDB, Sklearn, Pytorch, Matlab, OSIM, VICON, EMG filtering.

### Tosoh SMD

Columbus, Ohio

Mechanical Engineering and Equipment Intern

May 2021 – August 2021

- Investigated electrical anomalies hindering manufacturing, statistically analyzed data to diagnose cyclic behavior.
- Used static/dynamic FEA, CAD, and FMEA to assess high-force press apparatus for 30% greater force operation.

## LEADERSHIP

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### Flowers Invention Studio

Atlanta, Georgia

Metal CNC Master

July 2022 – Current

- Responsible for machine/sponsor acquisition and area training/maintenance. Completed Titans of CNC training program and several projects requiring novel fixturing methods, 4<sup>th</sup> axis indexing, and 3D tool paths.
- Skills: Fusion CAM, G-wizard, Tormach PCNC 1100, EMCO E350, Pocket NC Mill (5-axis), CNC Lathe.

## PROJECTS

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### Intelligently Automated Robotic Arm for Manufacturing

Atlanta, Georgia

Personal Project

July 2022 – Current

- Leveraging convolutional neural networks to process LEGO assembly booklets and automate construction. Using CoreXY and serial communication packets between Py and Arduino to orchestrate tool-path calculation and commands.
- Skills: Inverse Dynamics, Pybullet, Dynamixel AX12a, URDF, CNN, TCN, Multiclass-classification.

### LIDAR AI Locomotion Compliant Robot

Atlanta, Georgia

Vertically Integrated Research Project

December 2021 – June 2021

- Development of bio-inspired robotic systems to integrate onto a Cassie Biped with QDD actuated back-drivable joints.
- Skills: Quaternion Robotic Rotations, Inverse and Forward Dynamics/Kinematics, URDF, Ergonomic Design.

## SKILLS

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**Software:** Python, C++, Matlab, Java, PyTorch, XGBoost, Wandb, OpenSim, SQL, SOLIDWORKS, AutoDesk Products

**Analytics:** Model Validation, Likelihood, Statistical Machine Learning, Data Visualization and Design

**Manufacturing:** CNC (metal, wood, additive), SLA, SLS, Waterjet, Laser, Carbon Fiber, Polymer Printing, General Shop

**Mechanical:** Mechanical Dynamics, Fluid Dynamics, Deformable Bodies, Control Systems, FEA, CAD, CAM, Manufacturing

**Communication:** Proposal Design, Professional Writing, Admin Collaboration, Presenting/Public Speaking, Team Leadership

**Interests & Hobbies:** Coffee, rock climbing, snowboarding, lifting, chess, hiking, camping, baking, reading

