David Claffey

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EDUCATION

Georgia Institute of Technology – GPA: 3.9 **Atlanta, Georgia**

- B.S. Mechanical Engineering *August 2020 – May 2024*
- Computer Science Minor, Intelligence and AI

EXPERIENCE

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

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, 4th axis indexing, and 3D tool paths.
- Skills: Fusion CAM, G-wizard, Tormach PCNC 1100, EMCO E350, Pocket NC Mill (5-axis), CNC Lathe.

PROJECTS

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

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