Francis Gold Sy

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EDUCATION

City University of New York, City College — **Expected Grad:** *Dec 2022*
Major: B.E., Mechanical Engineering; Minor: Computer Science — *GPA: 3.84*
Interim Secret Security Clearance — *Active: Feb 2021 - Present*

PROFESSIONAL SKILLS

Software: Siemens NX, PTC Creo, SolidWorks, Fusion 360, MATLAB, Arduino, Java, Python, Gazebo, R.O.S.
Manufacturing*:* FDM & SLA 3D Printers, Laser Cutter, Rapid Prototyping, Design for Manufacturing

EXPERIENCE

John F. Kennedy Space Center, NASA — *Aug 2021 – Dec 2021*
Mechanical Engineering Co-op
• In a team of 4, lead design changes and fabrication (via additive manufacturing) of mini-RASSOR, a NASA-developed regolith excavation robot, for demonstration of lunar miner technology.
• Produced a fully functioning rover capable of mining 12 kg of regolith; presented progress to department director and faculty.
• Used PTC Creo and product lifecycle management software to support ongoing research and development projects involving lunar regolith excavation.

Northrop Grumman — *June 2021 – Aug 2021*
Mechanical Engineering Intern
• Designed test fixtures using NX that interface with electromechanical components and assemblies. Used Product Lifecycle Management software (Teamcenter, ISE, CADSTAR) to support ongoing projects and integrate design improvements.
• Led design of tabletop fixture that interfaced with a cold plate, PCB assembly carrier, and PAO chiller. Led internal design reviews and technical meetings to validate design under changing scope.

Biomechatronics and Intelligent Robotics Lab, CCNY — *Oct 2020 – May 2021*
Undergraduate Research Assistant
• In a team of 2, simulated different configurations of a kirigami-inspired, servo-actuated foldable robot using Gazebo/R.O.S. Fine-tuned Gazebo's PID controller to precisely actuate 8 and 22 active joints.
• Created URDF files comprising of parallel robot configurations with fine-tuned physics parameters (inertia, friction, etc.).
• Developed python scripts that interfaced with Joint Position Controllers and Tkinter library to enable smooth user control.
• Programmed MATLAB scripts using ROS and Parallel Computing toolbox to efficiently execute different configurations. Achieved locomotion through weight redistribution of servos.

WearWorks Inc, NYC
Mechanical Engineering Intern — *Jan 2020 – Aug 2020*
• In a team of 3, design, prototyped, and iterated the WayBand, a haptic smartwatch, for manufacturing.
• Reduced manufacturing costs by integrating design feedback from injection molding companies.
• Conducted plastics and stress simulations in SolidWorks to optimize product for manufacturing.
• Managed DFMEA, PFMEA, process flow chart, and other manufacturing-related documents.
• Contacted and identified U.S. and overseas suppliers (curing ovens, polyurethane dispensers, etc.) for B.O.M. needs.

Zahn Innovation Center, CCNY — *Feb 2019 – May 2020*
Engineering Apprentice
• Used SolidWorks, Fusion 360, 3D printers, and laser cutter for various projects and design applications.
• Designed, iterated, and delivered a multi-accessory K-8 mathematical learning apparatus to an external client.
• Reinforced understanding of Agile principles through small team collaboration and external client meetings. Presented progress on design-oriented projects through exploded views, renderings, and animations.

TECHNICAL PROJECTS

NASA L'Space Mission Concept Academy — *May 2021 – Aug 2021*
Deputy Project Manager
• In a team of 9, developed a mission concept that analyzes lunar surface PSRs for water-ice to ±1% accuracy.
• Wrote and thoroughly developed a Preliminary Design Report comprising of NX models of an EDL lander and lunar rover, Gantt charts, FMEAs, risk matrices, and orbital/instrumental calculations.

ACCOMPLISHMENTS

• May 2021: Pearl Tsung Memorial Awardee for outstanding performance in mechanical engineering department.
• September 2019: S Jay Levy Fellow – a selective year-long professional development experience.