

Mechanical Engineering Internship Experience

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ABSTRACT

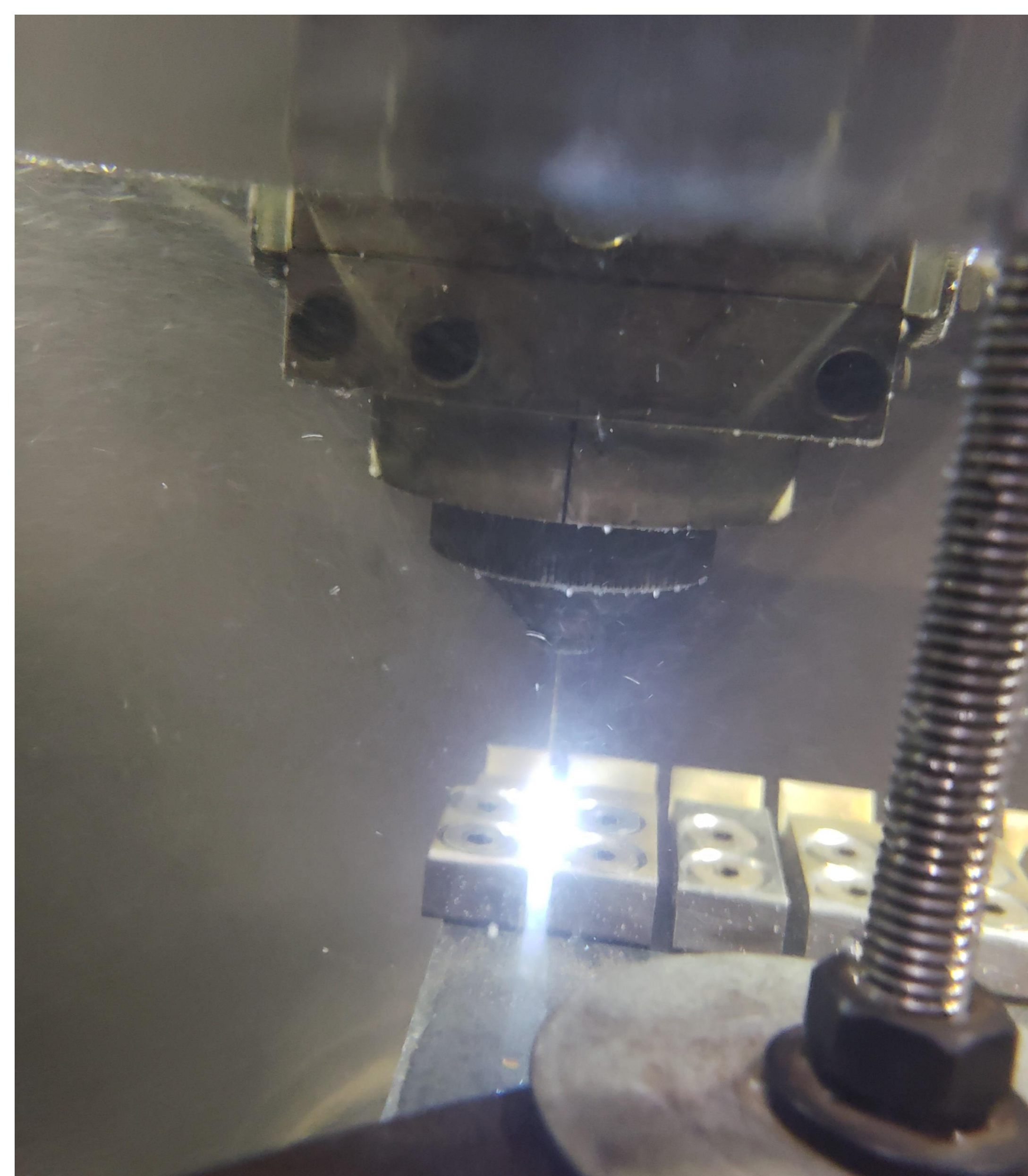
Throughout my coursework at Cleveland State University, I have taken advantage of many exceptional work experiences. From machining and metrology to machine design and prototype builds, I have worked within highly talented teams where my engineering aptitudes were avidly exercised. Three companies and nine semesters of co-op experience has exposed me to a wealth of engineering expertise including shop floor competence and intricate CAD work, where I have cultured design for manufacturing/assembly techniques along with proficiency in materials selection and component sourcing. I have become familiarized with creating and maintaining client relationships and on-site work for machine installations and service. As I prepare to graduate with an undergraduate degree in mechanical engineering, I consider myself well-equipped with a vast array of experience and trade savvy to enrich the respective industry with my knowledge.



Gears made using wire EDM

Wire EDM

Wire EDM can be utilized to create extreme high-precision features on conductive materials. This process uses an electrically charged wire submerged in a tank of dielectric fluid to erode work material in a very controlled manner. Tolerances are known to be around one-hundred thousandth of an inch (0.00001). Since machining is based on conductivity, this process is useful on harder materials that are difficult to machine with other methods. This process is relatively time consuming, depending on work material, yet does not require an active operator and can be tended to intermittently.



Submerged electrical discharge machining (EDM)

CNC Milling

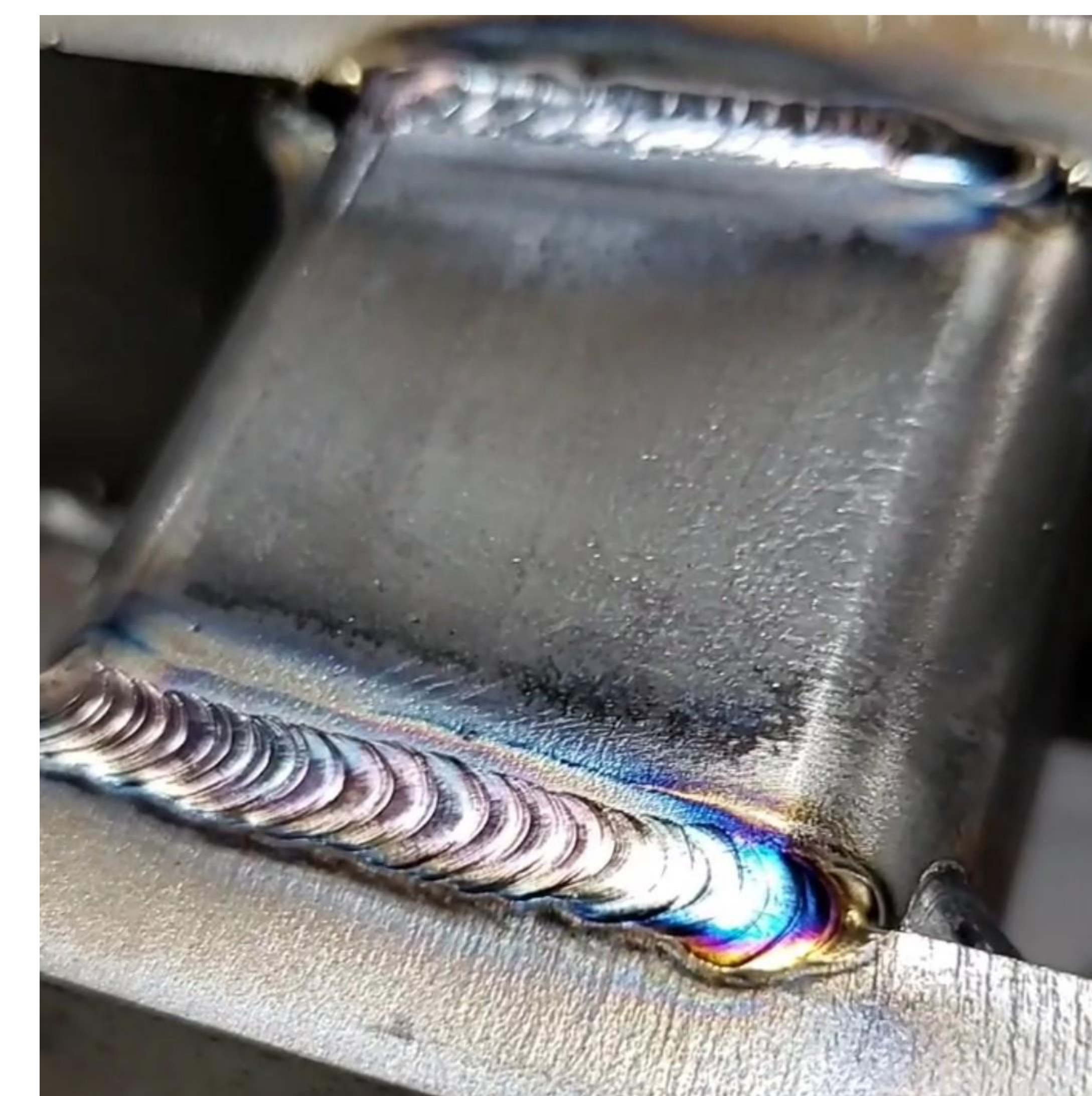
Computer numerical control adds repeatability and precision to machining that humans cannot mimic. Computer aided manufacturing softwares have allowed complex features to easily be created on milling machines with calculated toolpaths for incredible surface finishes and sustained tool life.



Aluminum part machined on Haas CNC mill

Welding

Metal fusion processes are delicate and precise. Common welding methods are MIG and TIG, whereas I have spent most of my time working with TIG. I have learned to TIG weld many grades of steel, stainless steel, and aluminum for vastly differing applications.



TIG welded steel frame sample

FUTURE

I plan to use my extensive manufacturing knowledge to continue building custom prototypes and machinery as an engineer. Design for manufacturing concepts have become second nature to me and allowed me to create better, more realistic designs. I have also employed my manufacturing know-how within my senior design project where I am working with additive manufacturing processes to enhance the scope of capable features within a design, along with minimizing time spent on manufacturing while creating lighter, more efficient and concise products.

Work Experiences

Bowden Manufacturing (November 2018-May 2019)
Swagelok (May 2019-August 2019)
MAGET (September 2019-Present)