Evaluation Plan

In our study, we plan to recruit n=30+ participants from diverse backgrounds. Participants are expected to have previous experience using CNC machines. We are targeting CNC users, CNC owners, Dyers, hobbyists, and engineering students. We are going to advertise in dedicated CNC forums and websites, Gainesville hackerspace, and UF college of engineering.

Our research design will employ quantitative and qualitative methods to understand the degree of learnability and satisfaction and suability using a new GRBL control interface for CNC machines for CNC users. Participants will be provided with specific guided tasks to test included features of our design. They will test both the beginner-mode interface and the Advance mode Interface. A questionnaire 5-point liker scale will provide to the participants alongside the questionnaire to self-assess their degree of learnability and satisfaction or agreement with the tasks involved in the entire interface to control the CNC machine.

One open-ended question used in the interview will be included to assess the user perception on how our design will help new users in controlling CNC machines with this interface: What features do you think would help the most in learning quickly to successfully operate CNC machines to newbies/beginners?. The Software Maxqda will be used to code the result from the open-ended question to inform the study what were the feature participants found more relevant to help new users learn to control a CNC machine while using this interface.

For conducting the test will accompany the participans via zoom where they will be sharing the screen which our guidance and instructions will be filling the survey and completing the tasks. Statistical analysis will be conducted for the self-assessment closed-ended questions in SPSS software. One of the risks we find in our approach, especially due to the pandemic, is not being able to get to the required number of participants so our results are no quantitative relevant or generalizable.