Automated CNC Program Selection
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Sponsor: Marvin

Project Description – What?

• Our goal was to develop a solution to automate the selection and output of CNC programs for Marvin's new CNC machines.
• Automating program selection creates the ability for incoming data to be automatically processed without the need for manual entry.
• The CNC machines can be run using a single push of a button using these two factors.

Why?

• Reduce operator error by eliminating incorrect program selection.
• Save time, money, and materials by massively reducing chance of error.
• Automation increases the efficiency of the CNC machine themselves, faster output.

Current Process:

Manual data input -> errors and delays

After Automation:

Dispatch Operator Post Processor CNC Machine

Figure 2: Marvin's current process for fabricating products. Includes operators manually selecting programs to run for the CNC machine

Figure 3: Marvin's new process using the developed automated selection. Operators no longer select a program and output is automatically created ready for the CNC machine to read.

Figure 4: Front end showing the program storing format.

Technologies Used

• MVC Architecture Back-End
• C#
• React
• Electron Front-End
• Microsoft SQL Server Management Studio
• .NET Core, Server/API Routing
• API Development with Postman

Our Program – How?

Back-End:
Our back-end uses the .NET MVC Framework which connects our database to our front-end. It can process the data as we need before it is sent using a RESTful API.

Front-End:
Our React based front-end uses Semantic UI elements to display the data from the database. It also allows for operators to view, update, and delete programs.

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