# Project Specification

## Encoder GUI

## Endeavos Innovations

## Revision 1.0

## 7/2/2024

## Introduction

This project aims to capture, analyze, and display position and time data from an encoder via an intuitive GUI, featuring real-time charts and graphs

## Objective

The objective of the Encoder GUI project is to develop a comprehensive system for capturing, analyzing, and presenting position and time data from an encoder. This includes creating an intuitive graphical user interface (GUI) for user interaction, real-time visualization through charts and graphs, and data export capabilities. Initially implemented with LabVIEW for AVR microcontroller data visualization, the project aims to migrate to cross-platform frameworks like QT or wxWidgets to enhance versatility and usability in educational settings. The primary goal is to deliver a reliable educational tool that enriches learning experiences through clear and engaging data presentations.

## System Overview

The overall system consists of a custom-built 3D printed encoder connected to an AVR microcontroller. The microcontroller transmits position and delta T data via USART, both on a regular timer basis and whenever an encoder interrupt is triggered. On the computer side, the data is received through USB and processed for further analysis and visualization.

## Brief Description of Operation

## Hardware

## Firmware (AVR Code)

## Input/Output List

## Software

## Acquisition Analysis

## Presentation

### User Interface

### Data Files

## Connectivity

## Priority Matrix Test Methodology Appendix A: Glossary Appendix B: Input/Output Channel List Appendix C: Sample Report Appendix D: Product Specifications