



Train Automation using an Arduino Uno and a Relay Module Shield

Relay-Controlled Train Automation

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Description

An Arduino Uno R3 with a relay shield switches power between four isolated sections of a model railway, creating sequence that allows two trains to operate on one loop.

System Overview

Inputs:	Configuration Jumpers
Controller:	Arduino Uno R3
Outputs:	4 Relays Shield
Controlled Device:	Four Isolated Model Railway Track Sections

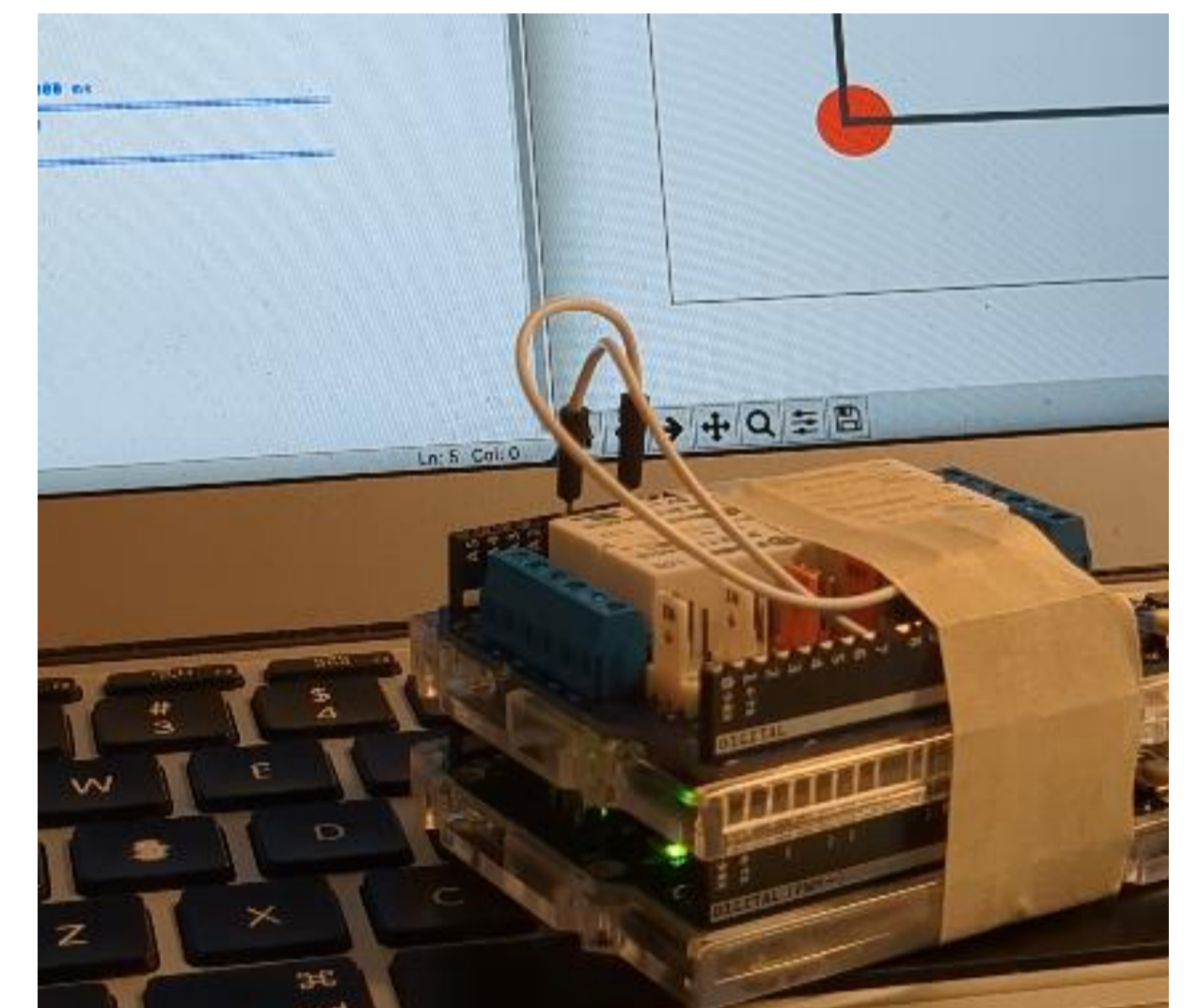
How It Works

- The Arduino reads six configuration inputs (jumpers) during startup, allowing to select different switching intervals.
- The controller then continuously powers one track section at a time by activating the corresponding relay.
- The sequence is chosen so that two trains can operate on one loop.

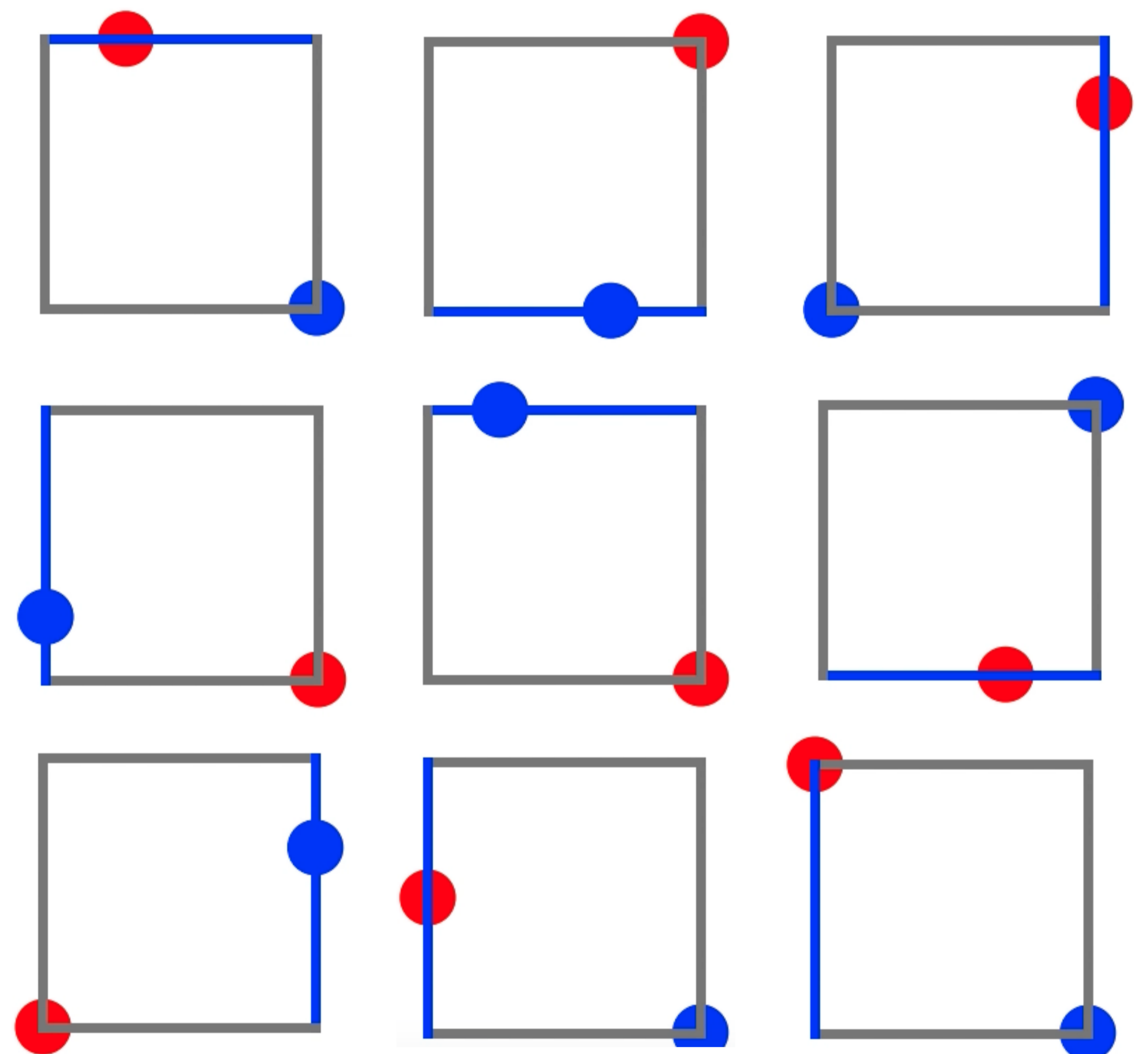
Results

- Fully automatic sequential operation of four railway sections.
- Two trains safely operating on one loop.
- Adjustable switching interval without reprogramming.
- Visualization of train positions and powered track sections using Python

Photos



Power Sequence



Project Link

