Members
Nicolas Bauer  Patricia Fu  Matt Chavez  Kurt Hollar  Man-Sum Lai  Evelina Overlingaite

Our Mission
Design, prototype and develop systems to improve the functionality and safety of the train that encircles the Santa Barbara Zoological Gardens.

Projects
• Train Tracking System
  Monitors the position of each train and sends information to staff and trains to prevent collision.
• Rail Gauge Monitoring System
  Measures the separation between the track to prevent derailment.

Our Design
The diagram shows each component and its hardware interface to the integrated system. It relies on inductive sensors to determine the location of the train and create a catalogue for the rail gauge measurement system.

Detachable Rail Gauge Observation (DRAGON)
Using a linear potentiometer affixed to a gas spring, the separation between the track is measured then recorded using LabVIEW. The data is then organized into a daily report on the track conditions. This system is towed by the train daily and then detached.

Train Tracking System
Long range inductive sensors detect metal triggers placed around the track. As each train passes over a trigger, the signal is sent to a DAQ and processed via LabVIEW. The position is then sent on an LED map located on the instrument panel on each train.

Wireless Interface
After being organized using LabVIEW, data is transmitted across the zoo to the other train. Received data is decoded by LabVIEW and displayed on the LED map.

Data Acquisition Device (DAQ)
Inductive Sensor
Linear Potentiometer
Wireless Interface
LED Map PCB
Detachable Rail Gauge Observation (DRAGON)
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