Project Proposal

Title: Toren-man (トレーンマン)

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Overview:

This is a game that emulates Pac-Man on the track. In our version, the dots are people. There will be two trains running on the track. One train, the killer train's goal is to hit every person around the track (possibly represented by Lego men), and a second train, the police train is trying to catch the other train and force it to a stop. The trains stop when the police train chases the killer train to an exit. The trains will be stopped before the exit so that no actual collision happens. Villagers are randomly generated relative to sensors, or specified by the player.

Technical challenges:

- We need to create a path finding algorithm that will avoid randomly moving objects on the track. This is difficult because the moving objects do not move in a predictable path.
- Utilizing the reverse functionality smartly to escape from coming train and achieve the optimal path. This is also difficult because it takes time for a train to reverse and leave the train vulnerable.
- The evil train can only use a subset of the track while the police train can use every piece of the track. Our current model does not distinguish between two different trains.

Technical solutions:

- Use probability model to predict what is likely to happen. Since the train moves randomly, a suitable probability model will predict what is going to happen precisely.
- Modify the path finding algorithm and model to accommodate reverse command. The modified model should compute the time for reversing and reacceleration. The evil train can make decisions based on the data from the model.
- Have the model keep information about the availability of each segment of the track to each train, and modify the path finding algorithm to avoid unavailable segments.