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Formal Languages and Computability

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DFA Project Proposal- Parking

I have been spending the past few days obsessively and unsuccessfully trying to think of an idea for my semester project in Formal Languages and Computability. I wanted it to be something I was passionate about. This afternoon, as I was commuting to Marist for my 12:30 class, I wound up spending about twenty minutes frantically looking for a parking spot. This is when I realized that I wanted my project to be one that makes parking easier for students at Marist.

The reason parking at Marist is a problem is because as the number of students/ buildings increases, the amount of parking spots stays more or less the same. Parking lots are two dimensional while dorms and buildings are three dimensional. Off-topic but Elon Musk often brings this problem up to defend his idea of building tunnels to cut down on Los Angeles's traffic problem.

One way to solve Marist's parking crisis would be the use of an autonomous parking system for a multi-level car park. There would be a multi-level garage and a platform with a conveyor belt that your car can go on. The platform's conveyor belt would push your car into a spot, or pull it that the spot onto a platform. Suppose this platform can move up, down, left, and right to line up with whichever parking spot.

The starting state would be the platform at position x, the position where the car is loaded on. The platform will bring it up to a level where there is an empty spot. Then the platform that the car is on will move to the left or right so that it is behind the empty spot. The conveyor belt on the platform will move forward to set the car in the parking spot. The platform will then return to position x until to be used for other cars. When the car is to be returned to the user, the platform will go back to the car its looking for. Once lined up, the conveyor belt on the platform would move backwards to pull the car onto the platform. Once loaded, the platform will move horizontally so that it is lined up with position x (the starting position). Then the platform will move vertically to lower itself to position x for the user to be reunited with his or her vehicle.