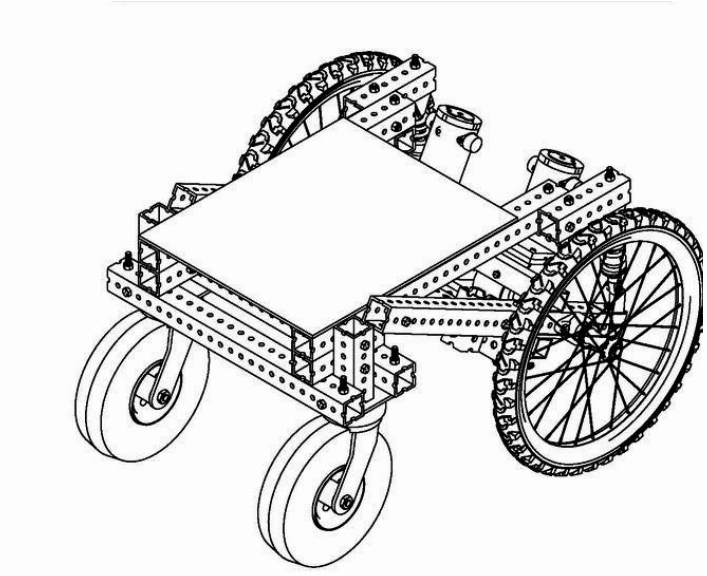
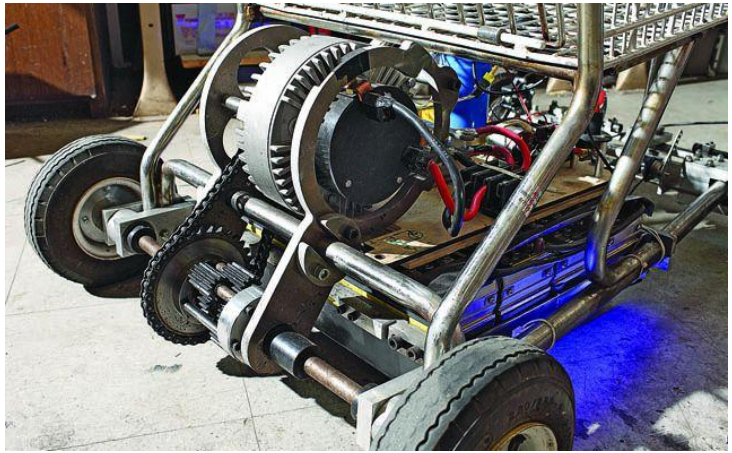
UGV Design



Why design the frame from scratch?

- Using an existing base will require require a lot of modification



Modified Shopping cart

Modified Trolley

Why design the frame from scratch? (Continued)

- The effort required to make modifications will approximately be the same designing the frame from scratch
- More freedom in the design process
- Flexibility to add components/features later down the line
- Making the frame from scratch would assure 100% reproducibility

Components and Budget (Rough Calculation)

	Item	Quantity	Price per item (Rs)
1	Hub Wheel Motor + Motor Controller	4	12,000
2	Car Frame	1	20,000
3	Battery	1	14,000
4	Arduino Mega	1	1200
			Total = 83200

Project Division

The project will be divided in a total of 5 parts

Milestone 1	Milestone 2	Milestone 3	Milestone 4	Milestone 5
Design and Fabrication of the car • CAD design • Stress Analysis • Frame Assembly • Fitting the motors	**Configuring the electronics** • Setting up power supply • Configuring the motor controllers • Designing the circuits as needed	**Implementing low level control** • Making a low level API for the control • Establishing tethered control • Establishing untethered control • Establishing RC control	**Fine tuning the motion** • Applying a pid loop to achieve precise motion • Applying Sensor fusion techniques to combine and extract the relevant data from the sensors	**Implementation of high level algorithms** • **Computer Vision** • **Slam** • **Synchronization with a drone for a complex task**

Timeline

Milestones 1-4 will take up a total of 2 months

	Description	Duration
Milestone 1	Designing and Fabrication	1 month
Milestone 2	Configuring the Electronics	10 Days
Milestone 3	Implementation of Low level control	10 days
Milestone 4	Fine tuning of motion	10 days

Is the project feasible in my opinion?

- The project is achievable within a span of 2 months given the availability of
    - Relevant Manpower
    - Relevant tools
    - Components