What are your dreams?
Overview

Controller Circuit
Transmission Circuits
Motor Circuit
Remote Controller
Car

RC Car

Layers Of Complexity
Example Overview for Analog and Digital RC cars

Example Digital RC Car

Example Analog RC car
Controller

Layout

Example Sine generator

Limitations: ~ 2kHz - 7kHz (Half of desired)
Transmitter-Receiver

Transmit signal wirelessly from controller to car

Considerations: carrier frequency and antenna length, choice of components based on Vdd/Vss, required RF power
Receiver-Transmitter (2)

Example FM Transmitter Circuit

Example FM Receiver Circuit
Car

Andres

Diagram showing a process involving an FM receiver, a low pass filter, a bandpass filter, and a frequency to voltage converter.
Car: Filters

Low Pass filter

\[ \begin{aligned}
R & \quad C \\
v_{in} & \quad \rightarrow \\
\downarrow & \quad C \\
\uparrow & \quad v_{out}
\end{aligned} \]

Band Pass filter

\[ \begin{aligned}
R_1 & \quad C_2 \\
v_{in} & \quad \rightarrow \\
R_f & \quad + \\
C_1 & \quad R_2 \\
R_b & \quad - \\
\rightarrow & \quad v_{out}
\end{aligned} \]
Car

Frequency to Voltage

Motor Control

![Diagram of 555 timer circuit with PWM signals for forward and reverse control]
Goals

Minimum:
- Successfully employ radio control to turn on a motor.
- Motion may be limited to simply going forward or turning in place.

Goal:
- Control of forward and reverse
- Steering through pwm of right and left motors
Stretch Goals

- More channels to the car:
  - Headlights
  - Siren
- Sensors
  - Stop before a wall
  - Send data back to controller
Timeline

Sunday, April 17 - all three modules completed and working individually

Sunday, April 24 - all three modules working together; testing of car performance and debugging; stretch goals designed in detail

Sunday, May 1 - stretch goal circuits built and incorporated into basic RC car design