1 Artificial neural brains

1.1 Braitenberg Vehicles

- **Ipsilateral**: Connections on same side
- **Contralateral**: Connections cross sides
- **Excitatory**: Input Increases → Output Increases
- **Inhibitory**: Input Increases → Output Decreases

Vehicle emulates simple P-type control.

Mathematical model includes:

- s_x: Sensor value
- v_x: Output value
- k: Linear proportional gain

Mathematical example implementations:

- **Ipsilateral**: $v_{\text{left}} \propto s_{\text{left}}$
- **Contralateral**: $v_{\text{left}} \propto s_{\text{right}}$
- **Excitatory**: $v \propto s$
- **Inhibitory**: $v \propto \frac{1}{s}$

Pathplanning: Finding path from known start to known end including known obstacles.

Complex behavior emerges by combining multiple weighted control loops running in parallel.