

# Photovoltaic Martian Bugs

---

*Adam Jackson & Matt Travis*

*Advised By:*

*Dr. Huggins & Dr. Malinowski*

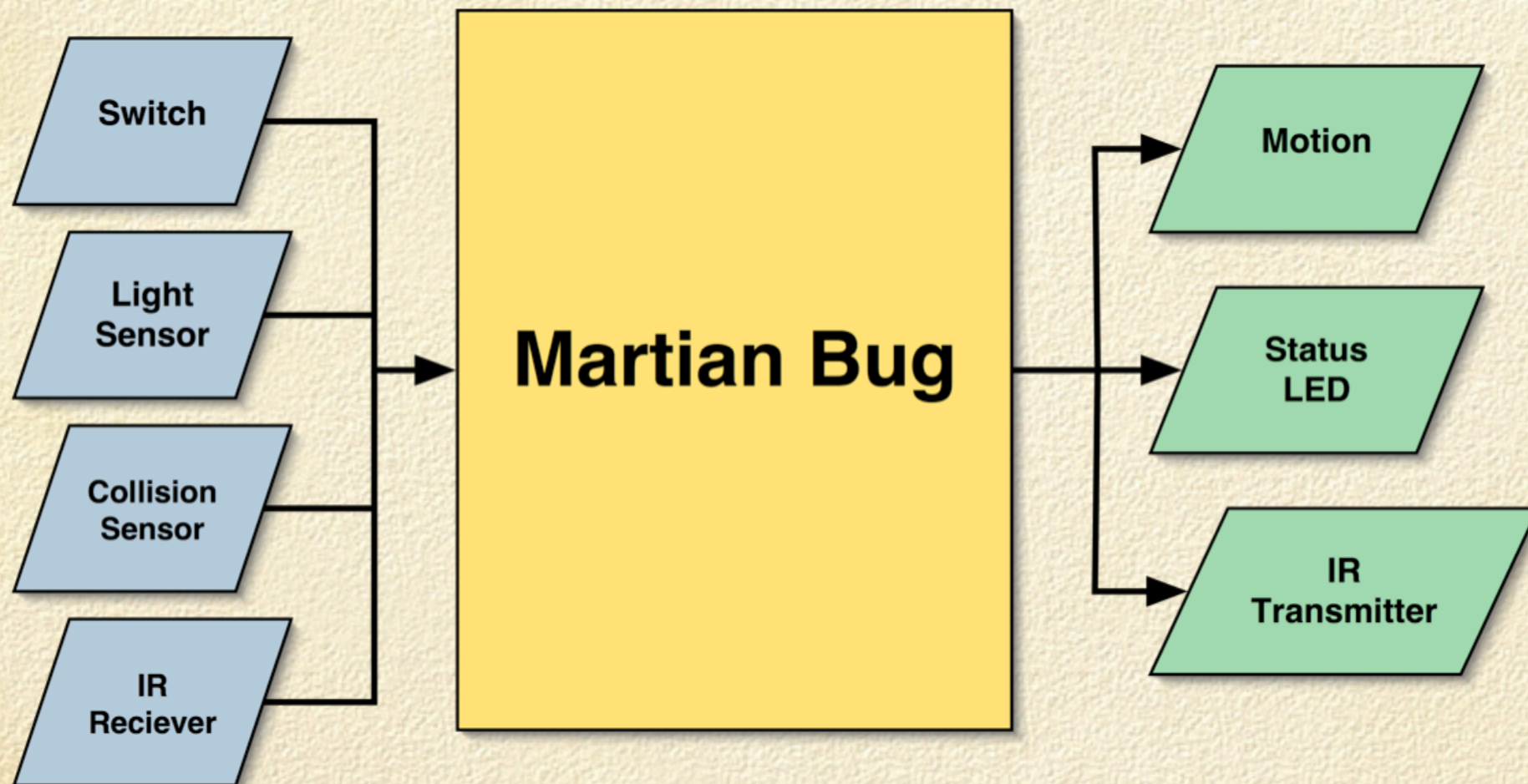
# Project Summary

---

- ❑ Small autonomous robots
- ❑ Solar powered
- ❑ Interact with the environment
- ❑ Operate in sunlight and low light conditions
- ❑ Several operational modes
- ❑ IR communication

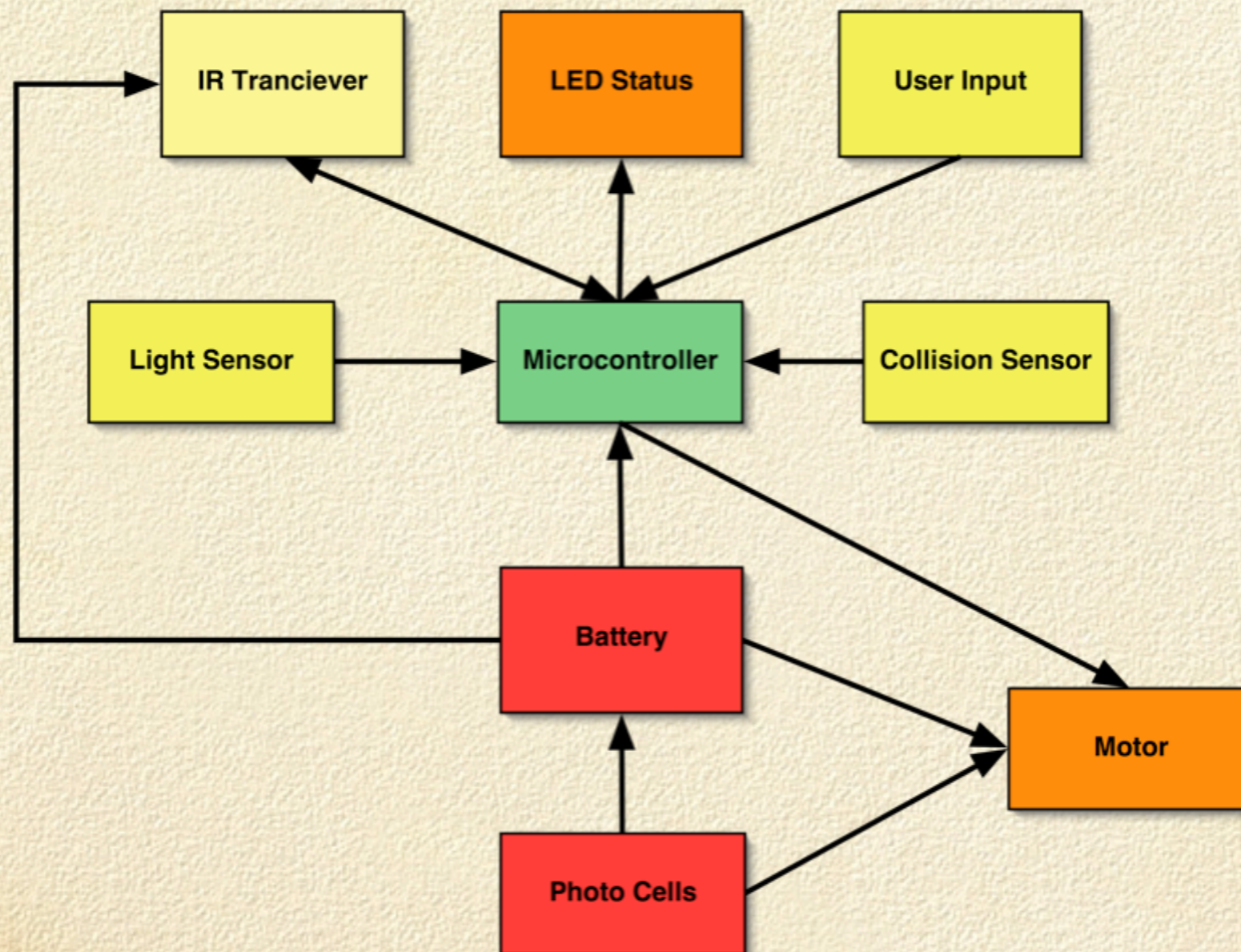
# Overall Block Diagram

---

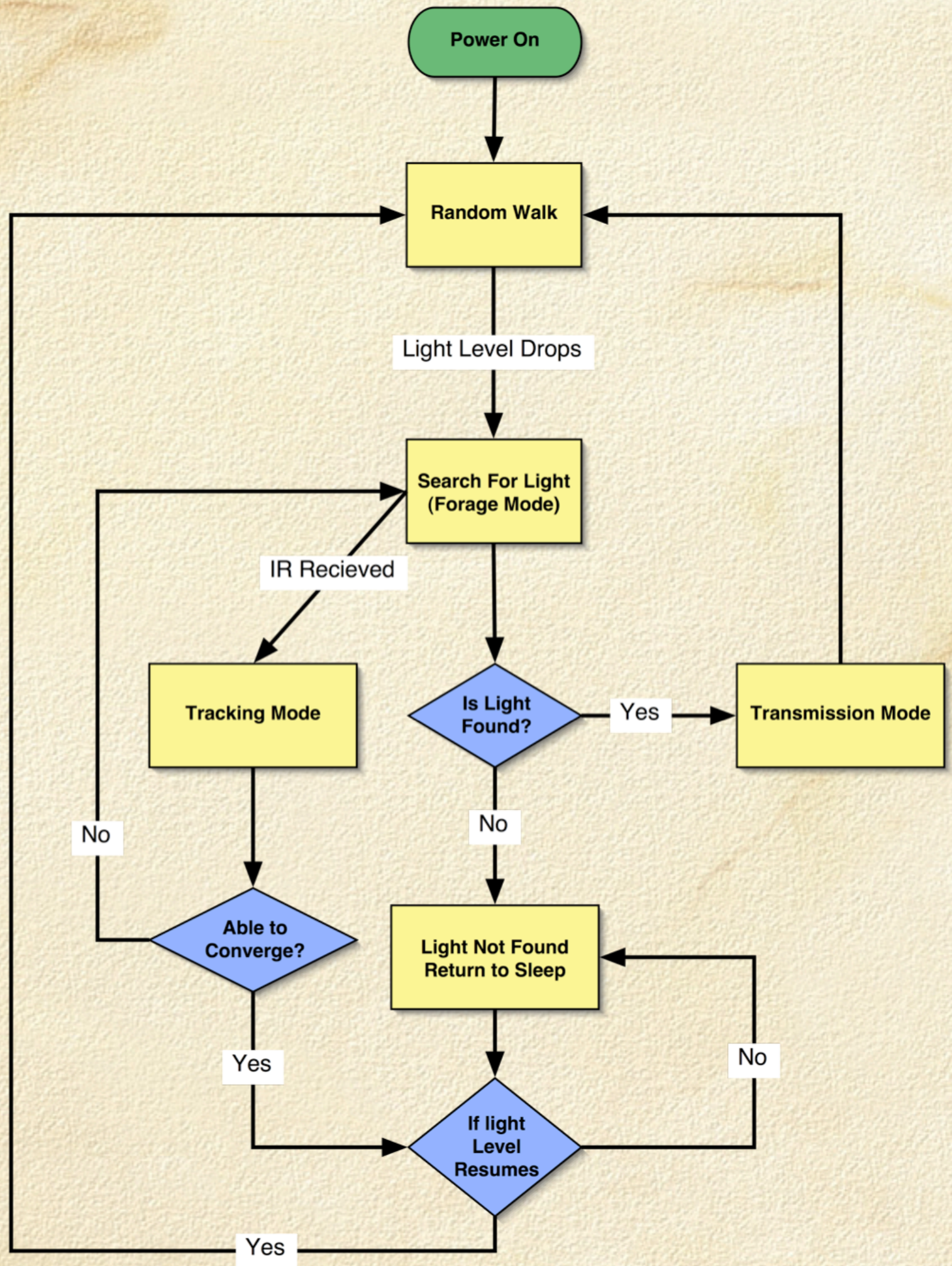


# Hardware Flow Chart

---



# Software Flow



# Original Schedule

---

Week 1	Solar Panel Testing	Motor Testing
Week 2	Power Regulation	Motor Control Hardware
Week 3	Power Regulation	Motor Control Hardware
Week 4	Power Regulation	Motor Hardware Testing
Week 5	Solar Panel and Battery Integration	Motor Power System Integration
Week 6	Optoelectronic Testing Microcontroller setup	Optoelectronic Testing Microcontroller setup
Week 7	Software Modules	Software Modules
Week 8	Software Modules	Software Modules
Week 9	Software Modules	Software Modules
Week 10	Software Testing	Software Testing
Week 11	Final Product Assembly	Final Product Assembly
Week 12	Product Testing	Product Testing
Week 13	Product Testing	Product Testing
Week 14	Finishing Touches	Finishing Touches

# Completed Tasks

---

- ❑ Solar Panel Testing
- ❑ Power Regulation
- ❑ Microcontroller Setup
- ❑ A/D Interfacing
- ❑ Motor Testing
- ❑ Motor Interfacing
- ❑ Motor Driver Research

# Remaining Tasks

---

- ❑ Battery Integration
- ❑ IR Communication
- ❑ Microcontroller Hardware Interfacing
- ❑ Fabrication of Solar Array
- ❑ Fabrication of Chassis



# IR Communication

---

- Two Receiver Units
  - IR Data Port (Interrupt)
  - IR Level Sensor (Polled)
- Transmission Frequency
  - 200-300 Hz For A/D
  - 5kHz-10kHz for Data Port
- Passive Band Pass Filters

# Updated Schedule

---

Week 7	Software Completion	Software Completion
Week 8	IR Scheme	IR Scheme
Week 9	IR Software	IR Hardware
Week 10	Battery Integration	Hardware Integration
Week 11	Final Product Assembly	Final Product Assembly
Week 12	Product Testing	Product Testing
Week 13	Product Testing	Product Testing
Week 14	Finishing Touches	Finishing Touches

Questions?