

ARM3

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EECS 373: Design of Microprocessor Based Systems

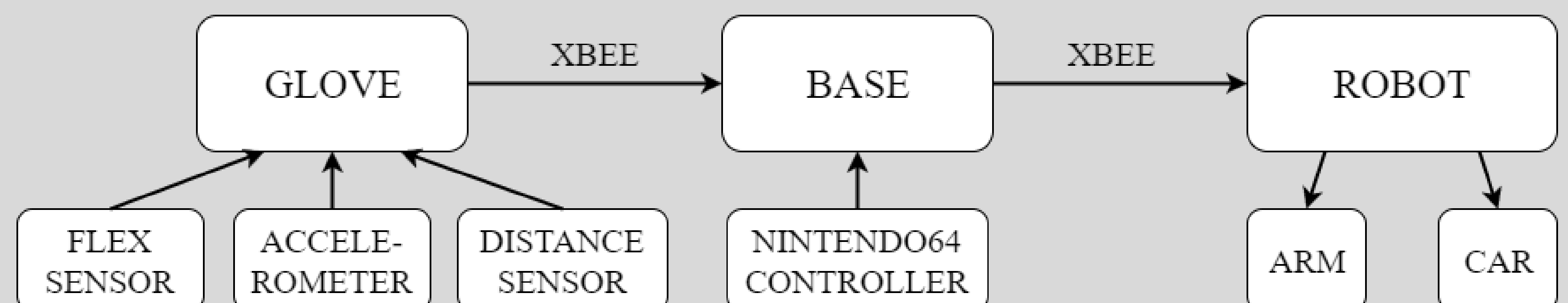
INTRODUCTION:

IDEA:

- Create a mobile robotic arm that mimics the movement of the human arm
 - For use by people who have limited use of their lower body
 - Can be scaled up, eg. for moving heavy objects
 - Has practical use in biomedical applications

PROJECT GOALS:

- Wireless communication
- Human-machine interface



IMPLEMENTATION:



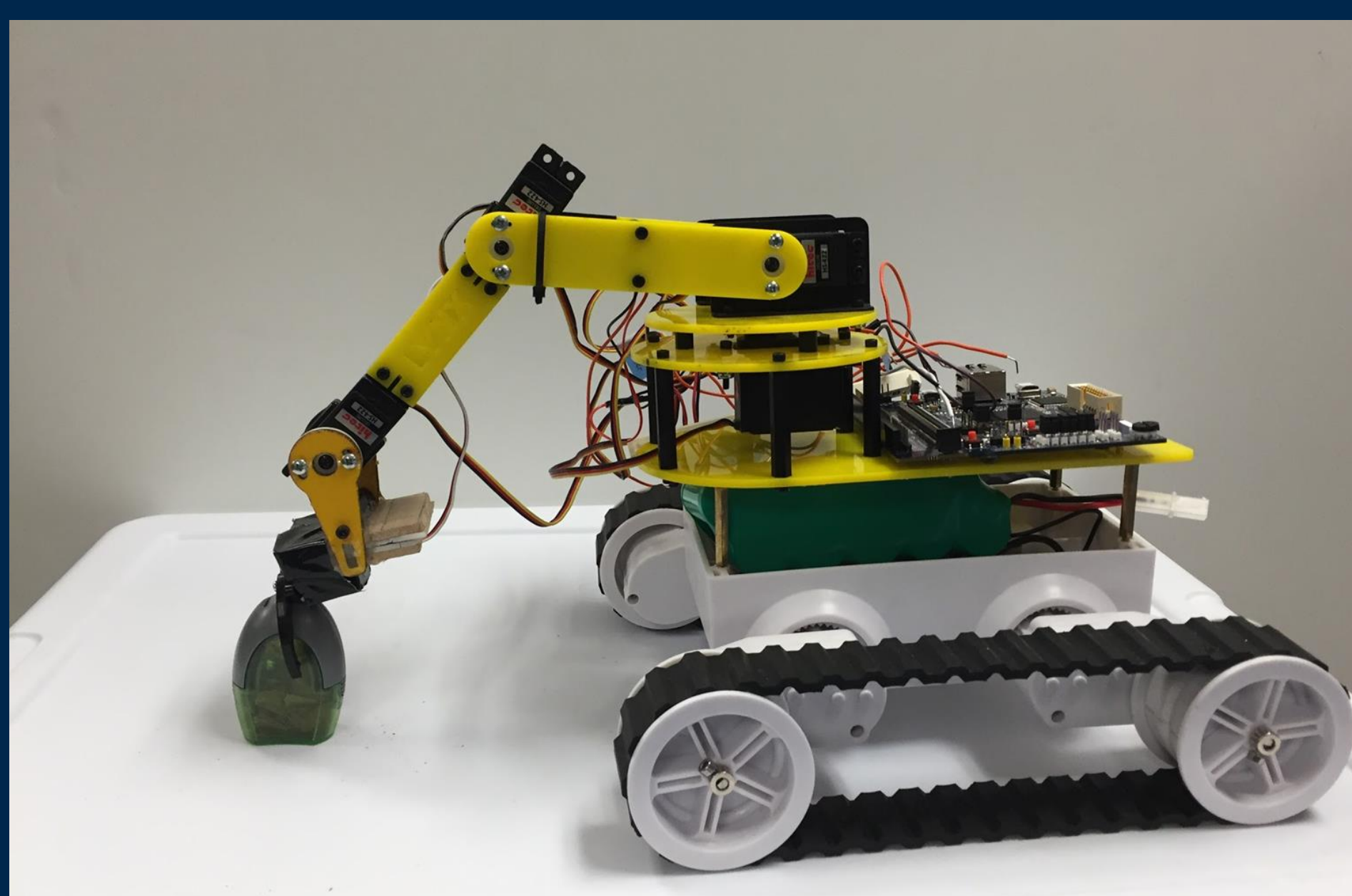
GLOVE

- Flex sensor
 - Map opening and closing of hand to the claw on the robot
- Accelerometer
 - Map wrist movement to the robot's wrist
- Distance sensor
 - Map distance of hand from table to the elbow of the robot
- XBee
 - Send analog voltages as digital data to base



BASE

- Actel SmartFusion
 - Receive UART transmissions from glove
 - Process data
 - Send UART packet to robot
- XBee
 - Receive data from glove
 - Send processed sensor data and controller signals from the base to the robot
- Nintendo64 Controller



ROBOT

- Actel SmartFusion
 - Receive UART transmissions from base XBee
 - Process data packets and write to GPIO/MMIO
- Arm
 - Write PWM signals to servos
- Car
 - Use H-bridges with PWM signals to control motors