

## Secure communication for task completion with heterogeneous robots

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### Vocal Commands

- Julius Speech Recognition Software
- VoxForge Speech-to-Text Acoustic Model

### Decision Making

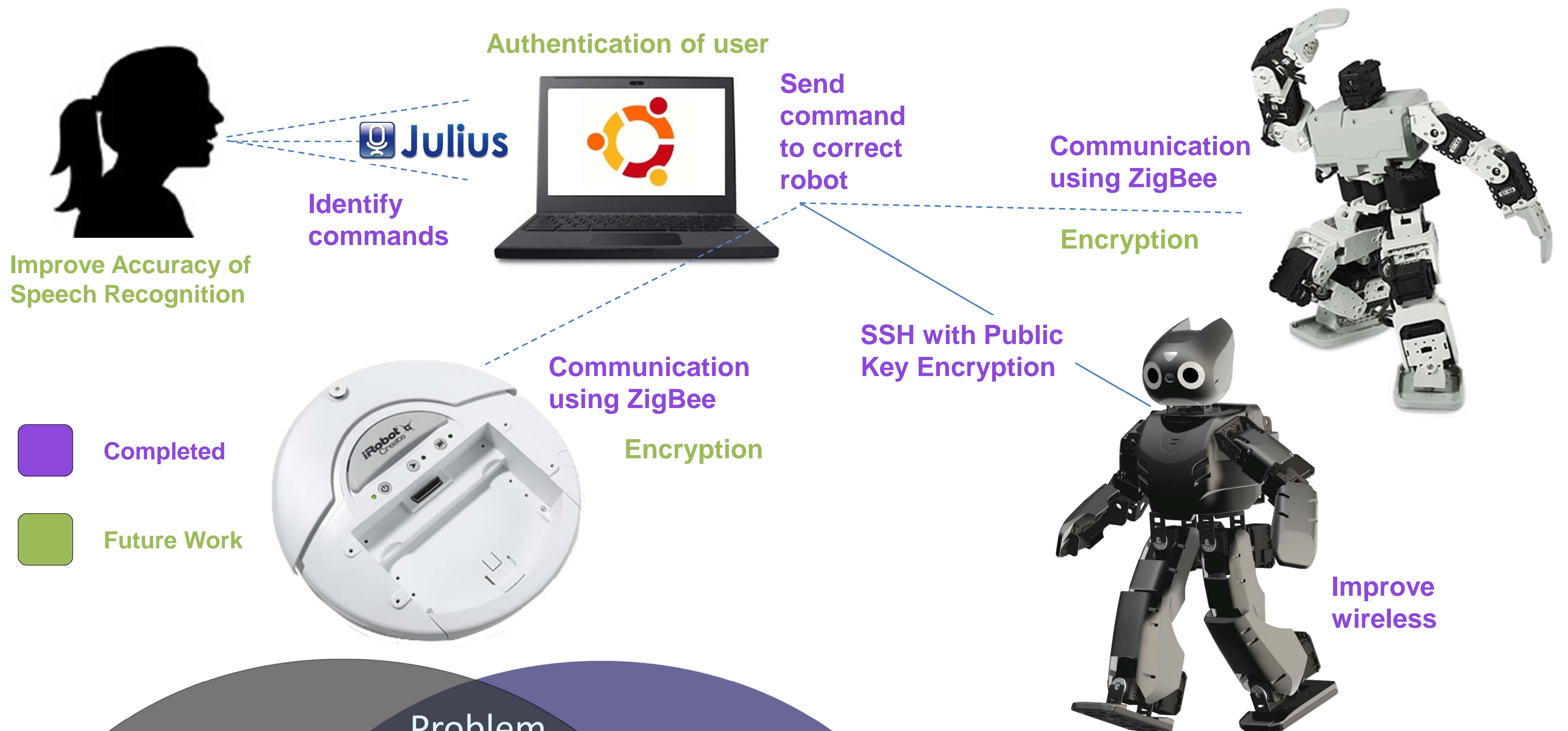
- Based on vocal input
- Individual robot capability and design determines possible commands

### Communication

- Based on vocal input
- Individual robot capability and design determines possible commands

### Heterogeneous Robots

- DARwIn-OP
- Bioloid
- iRobot Create



### Problem Statement

#### Network Security

- Protect existing connection
- Prevent alteration of sent command

- Vocal commands
- Central computer communicates to multiple, heterogeneous robots
- Secure communication

#### Robot Communication

- Ability of robots to transmit and receive commands or data

### Problem Significance

- Worldwide growth of robotics
- Used today in industrial assembly, welding systems, defense, security, rescue, cleaning, and entertainment purposes
- Environment-agnostic networks to
- Work together to achieve common task
- Applications:
  - critical defense
  - rescue applications, ie, Unmanned Aircraft Systems (UAS)
  - disaster recovery



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