HMI VOICE CONTROLLED WATER DISPENSER

HYDROVOICE

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INTRODUCTION

HydroVoice is a bedside smart device that combines a lamp and hands-free water dispenser. The system enables users to request water through voice commands or an HMI touchscreen while supporting temperature and volume control. By integrating intelligent sensing and automation, HydroVoice improves convenience, safety, and nighttime accessibility.

OBJECTIVE

- Design and implement a voice-enabled smart water dispenser
- Provide temperature- and volume-controlled dispensing
- Enable safe nighttime operation using sensing and illumination
- Integrate HMI touchscreen for manual control and feedback
- Prevent overflow using cup detection and verification logic

SYSTEM OVERVIEW

HydroVoice uses a dual-input control system consisting of voice recognition and an HMI touchscreen. User commands are processed by the microcontroller, which verifies cup presence and system safety before activating the pump and temperature module. Integrated LEDs provide nighttime visibility, while the depth-sensing system ensures accurate, spill-free dispensing.

KEY FEATURES

- Voice-controlled water dispensing
- LCD/HMI touchscreen interface
- Adjustable temperature (hot, warm, cold)
- Depth-sensing cup detection
- Night-safe LED illumination
- Ambient top lighting
- Smart water level monitoring
- Quiet, efficient pump system
- Compact modern enclosure

CAD AND SCHEMATIC DESIGNS

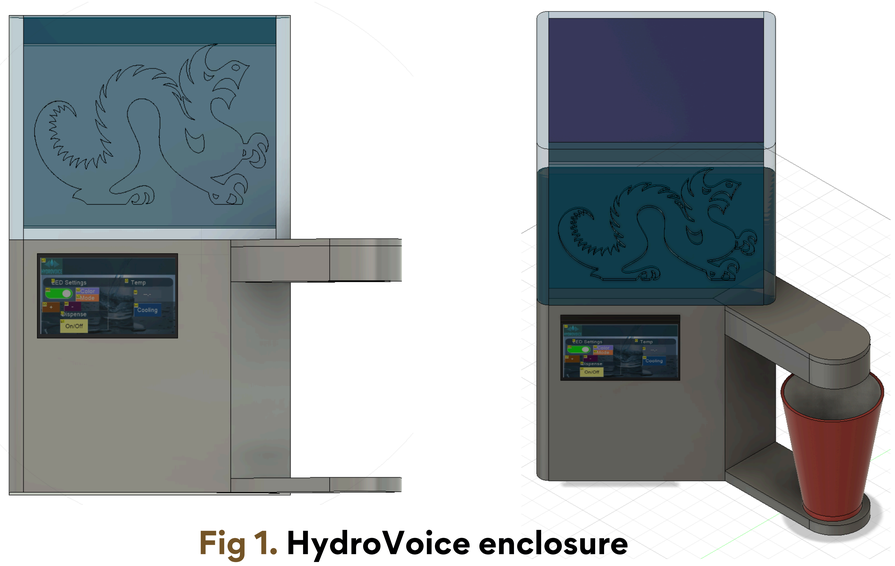

Fig 1. HydroVoice enclosure CAD model

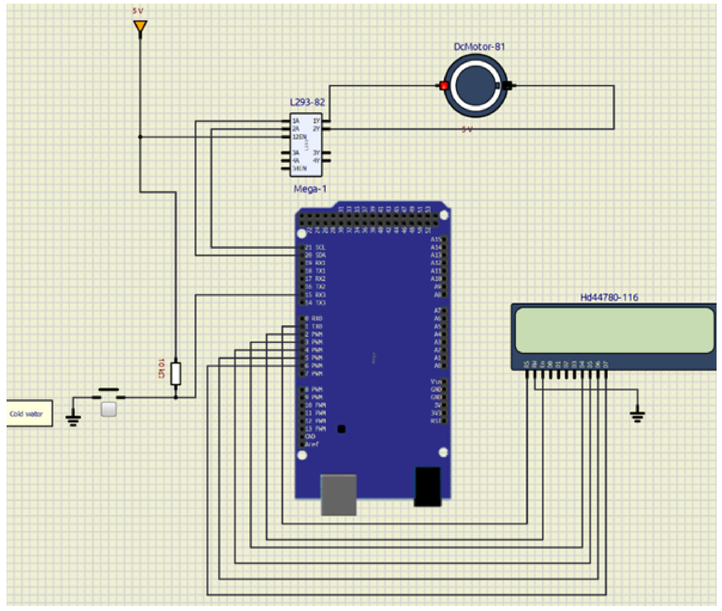

Fig 2. System circuit schematic

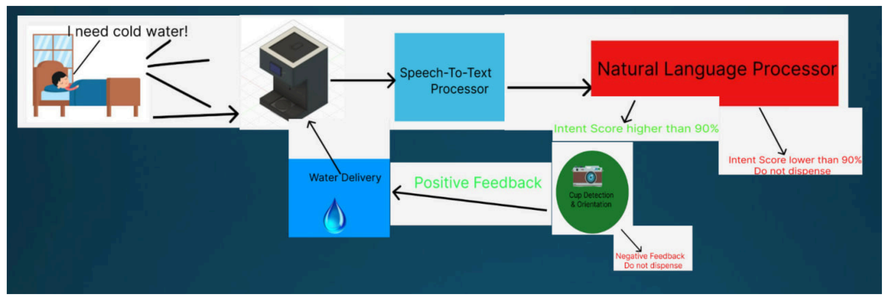

Fig 3. Intelligent control architecture