



University of Dayton

Human-eyewear Device Interaction

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Introduction

The objective of this project is to address the problem of interaction between the user and eye-wear devices. In particular, our framework recognizes audio instructions, hand gestures, and human gazes and translate them into commands. This advancement in eye-wear device interaction will facilitate the usability of eye-wear devices with virtual objects moving forward.

Audio and Object Recognition Components

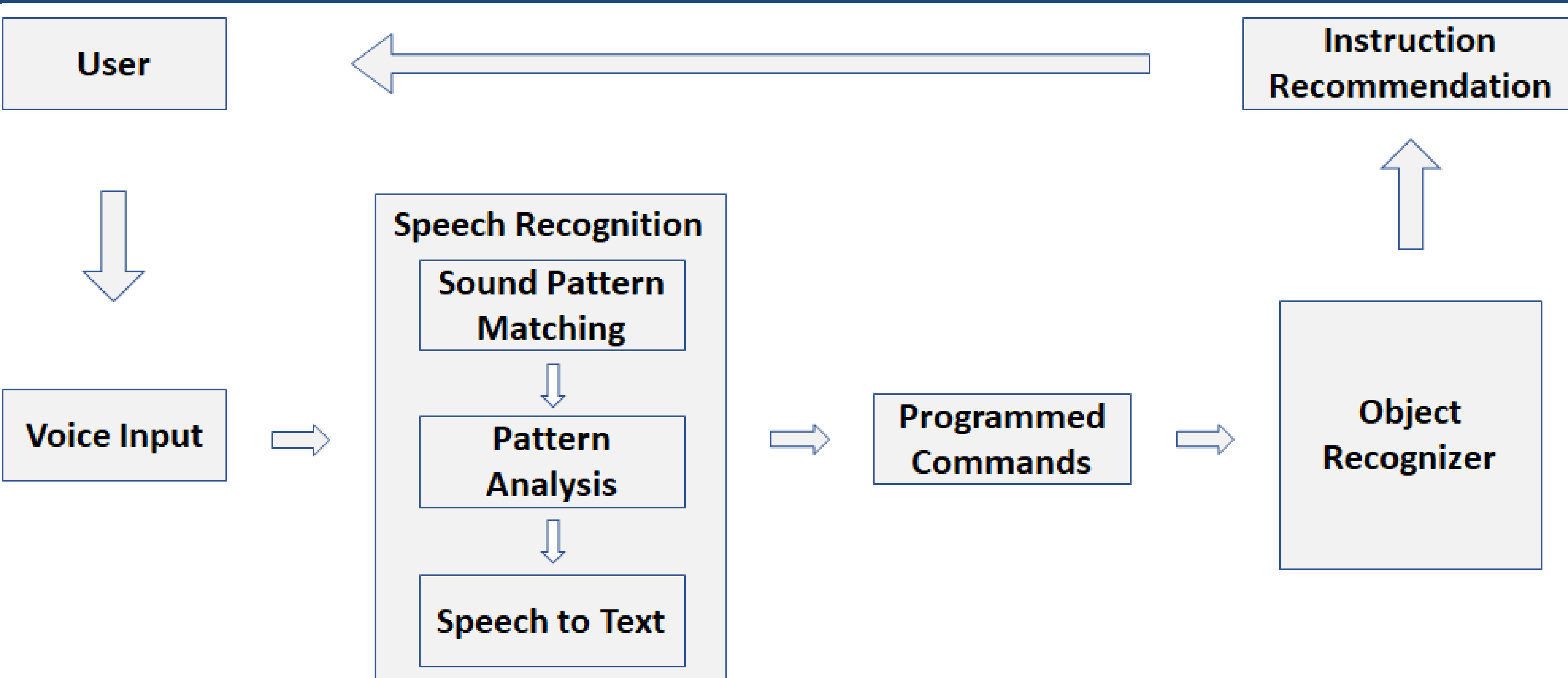


Figure 2. Audio Recognition Component.

This component receives audio input from the user and converts to text.

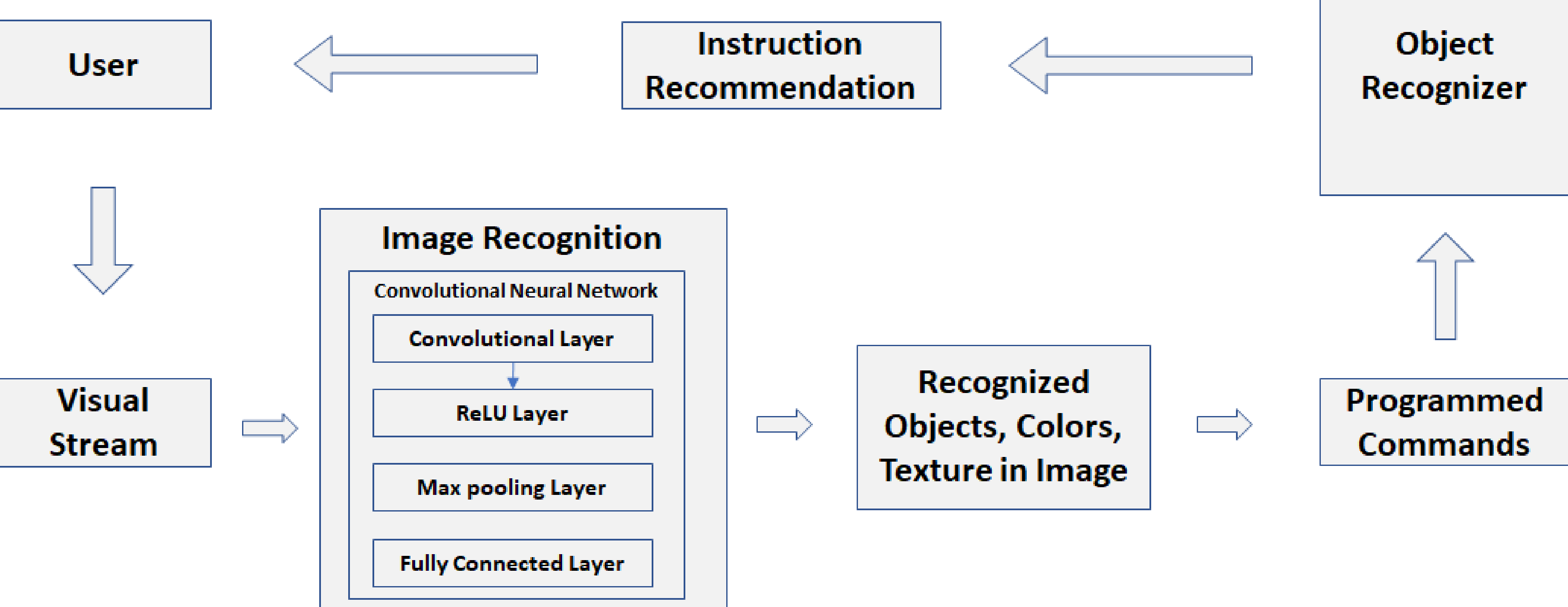


Figure 3. Object Recognition Component.

This component receives visual input captured by the eye-wear device and recognizes different objects.

Proposed Framework

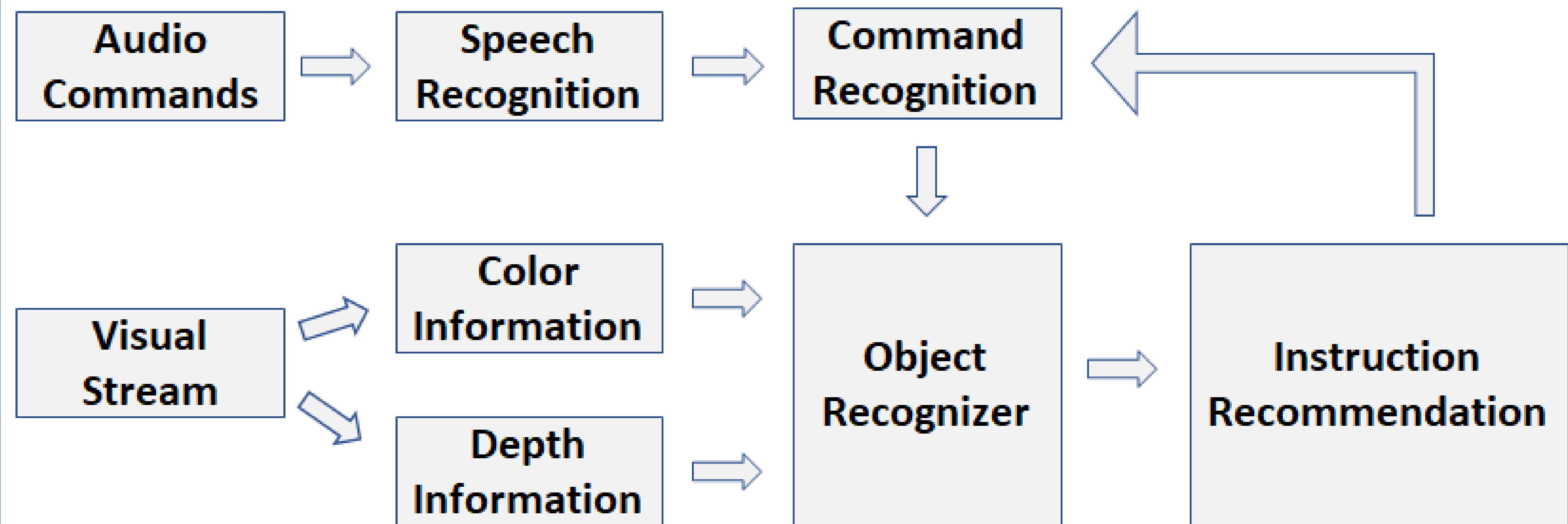


Figure 1. The proposed framework.

The framework processes the instructions given by the user and converts the audio, visual inputs and matches with defined and well-programmed functions called commands in the framework. These commands help the framework to implement necessary actions requested by the user.

Experimental Results



Input

Output

```

Objects [ { "rectangle": { "x": 518, "y": 24, "w": 144, "h": 111 }, "object": "Microwave oven", "parent": { "object": "kitchen appliance", "confidence": 0.741 }, "confidence": 0.709 },
{ "rectangle": { "x": 838, "y": 5, "w": 149, "h": 511 }, "object": "refrigerator", "parent": { "object": "kitchen appliance", "confidence": 0.864 }, "confidence": 0.831 },
{ "rectangle": { "x": 553, "y": 262, "w": 159, "h": 258 }, "object": "oven", "parent": { "object": "kitchen appliance", "confidence": 0.662 }, "confidence": 0.599 },
{ "rectangle": { "x": 1083, "y": 312, "w": 204, "h": 239 }, "object": "kitchen appliance", "confidence": 0.703 } ]
  
```