Writing Recognition

Stephanie Hsu
6.111 Final Project Presentation
Fall 2006

Outline

- Overview of project
- Block Diagrams
  - Mouse input
  - Character recognition
    - Strategy
  - Display
- Timeline
**Project Overview**

- Interfaced with labkit through PS/2 connector
- Mouse cursor displayed on screen
- Image displayed on monitor stored in ZBT RAM
- User writes by clicking and dragging in writing pad.

**User Interface**

- Mouse
  - Interfaced with labkit through PS/2 connector
  - Mouse cursor displayed on screen
- Image displayed on monitor stored in ZBT RAM
- User writes by clicking and dragging in writing pad.
Module Overview

Mouse Module

- Extracts position and button click signals
- Outputs to display and character recognition modules
Character Recognition Module

- Mouse Memory
  - Writing pad is divided into 8 blocks
  - When user "writes", the cells that the mouse passes through is stored into a memory buffer (in order)
  - Also stores a bit that identifies that a mouse button is being held down

- Character Lookup
  - Analyzes memory buffer from mouse memory
  - Outputs encoding for character recognized to display module.
Character Recognition Strategy

- Store (in order) cells that mouse visits when writing
- Analyze using FSM
  - Builds character encoding sent to display module
- User follows template to write characters
- Left button: lower case
  Right button: upper case

Character Recognition Strategy (FSM)

- Identify which half (horizontal) of pad writing starts (1 or 0)
- Identify relationship between current cell and future cells
- Continue with all cells
- Display module uses result to lookup image of character to display.
Display Module

- Mouse Movement
  - Mouse cursor
  - Mouse trail when writing
- Position Tracker
  - Location of recognized character
- Display Generator
  - Controls image stored in ZBT through controller
User Interface

- **Mouse**
  - Interfaced with labkit through PS/2 connector
  - Mouse cursor displayed on screen
- Image displayed on monitor stored in ZBT RAM
- User writes by clicking and dragging in writing pad.

Display Module

- **Mouse Movement**
  - Mouse cursor
  - Mouse trail when writing
- **Position Tracker**
  - Location of recognized character
- **Display Generator**
  - Controls image stored in ZBT through controller
## Timeline

<table>
<thead>
<tr>
<th>Date</th>
<th>Task Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>11/18</td>
<td>Display Module, Develop Character Recognition Algorithm</td>
</tr>
<tr>
<td>11/25</td>
<td>Implement Character Recognition Strategy: FSM, Generate character lookup tables</td>
</tr>
<tr>
<td>12/2</td>
<td>Implement Character Recognition Strategy: FSM</td>
</tr>
<tr>
<td></td>
<td>Module Interaction issues</td>
</tr>
<tr>
<td>12/9</td>
<td>Module Interaction issues</td>
</tr>
<tr>
<td></td>
<td>Working project</td>
</tr>
<tr>
<td>12/16</td>
<td></td>
</tr>
</tbody>
</table>

**Questions?**