Microsoft Surface for Stroke Rehabilitation

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Stroke

A

- Affected area
- Blockage

B

Left brain damage
- Results:
  - Right side paralysis
  - Speech and memory deficits
  - Cautious and slow behavior

Right brain damage
- Results:
  - Left side paralysis
  - Perceptual and memory deficits
  - Quick and impulsive behavior
Stroke Rehabilitation

- Speech therapy
- Occupational therapy
- Physical therapy
Microsoft Surface 1.0

Large multi-touch surface

- Touching
- Dragging
- Scaling
- Turning
- Flicking
Surface’s Potential as a Rehabilitative Tool

- Finger Recognition
- Blob Recognition
- Augmented Objects
Problem Statement

Design and develop a system using the Microsoft Surface that:

- Assesses the motor skills of post-stroke patients
- Works as a rehabilitation tool
- Motivates patients to engage in the rehabilitation process
Our Game Prototype

- Propel sea creatures toward goals
- Gestures are rehabilitative exercises
- Motivational, no negative feedback
Fish Gesture
Fish
Jellyfish Gesture
Jellyfish
Gesture Feedback
Saving

- Keep track of data to assess progress
- Quantify measurements so they aren’t subjective observations
Future Game Features

• Trophies and other rewards
• Creating a fish friend through creature enhancement
Future Game Features

• More gestures/new creatures
• Scalability
• Augmented objects
• Progress visualization
• Full routine mode
User Studies
User Study #1

- Interviewed 6 patients
- Results: importance of scalability for motivation
- They performed both gestures on the Surface
User Study #2

- Scheduled for April 23rd
- Users interact with game for 10 minutes/day for 5 days
- Test the reliability of the measurements and observe patient response
Questions?