




Master of Puppets

EECS 495: TIDAL
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Agenda

- Introduction and Motivation
- Related Work
- Theoretical Background
- Design
- Current Implementation
- Conclusion and Future Work



Introduction and Motivation

“What we learn with pleasure we never forget” — Alfred Mercier

- Our project is to introduce children to Chinese culture through interactive storytelling using traditional shadow puppets
- A system that allows children to learn:
 - The art of puppetry
 - The art of storytelling
 - Chinese culture and history

Related Work

- **iTheater Puppets**

- For children to experience storytelling through use of hand puppets
- Two IR components positioned on the arms of the puppets to interpret movements



- **Puppet Wall**

- For professional theatre artists
- Accepts multiple inputs to move puppets on a screen



Related Work

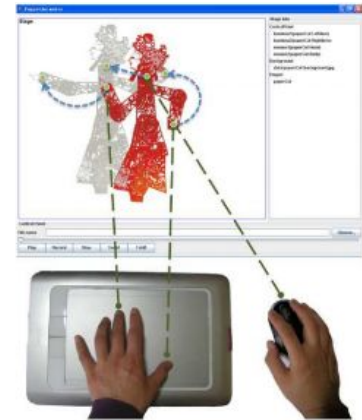
- **ShadowStory**

- Storytelling system
- Design puppets for the story using a tablet with pen input and project on a screen



- **Puppet Animator**

- Allows inexperienced users to animate puppets with a pointing device
- Users create a design for a virtual puppet, organize its movement, and record its play as animation clip



Learning Objectives

- Primary Learning Objectives are:
 - How do we ensure users understand the cultural importance and art of Chinese shadow puppetry?
 - Can users get a sense of how/why puppets were used as a storytelling medium?
- Secondary Learning Objectives
 - By engaging users on a deeper affective, sensory, and cognitive level, can we successfully teach users about the importance of pieces/themes in the Hall?
 - Will the use of our system help inspire connections from our user-system interaction to other pieces in the Hall?

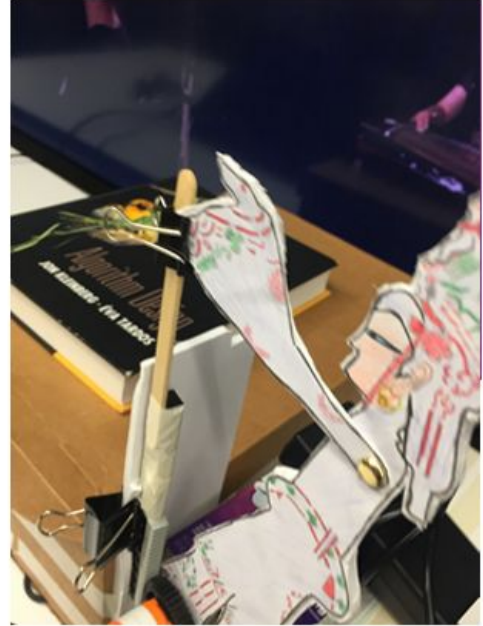
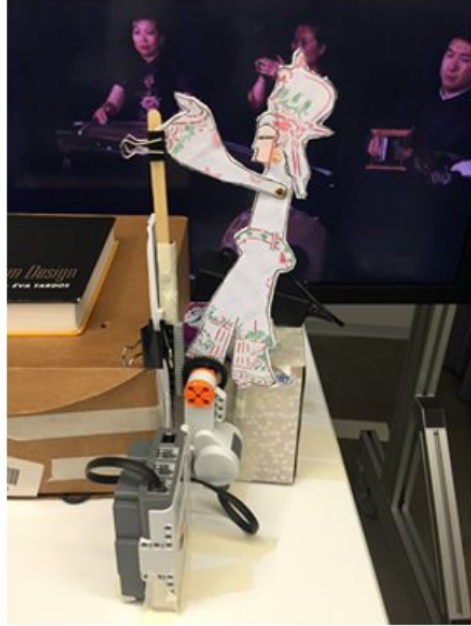
Theoretical Background

- Our primary focus is to involve the art of storytelling through puppets to engage museum visitors and their learning
- Why Storytelling?
 - Increases imagination skills (Fredericks, L. 1997)
 - People storytellers by nature (Bruner.J. 1990)
 - Narrative is less likely to be forgotten (Caine, R. N., & Caine, G. 1991).
 - Construct a moral position (Miller, E.. 2011)

Initial Design Prototype

- Physical Puppet
 - A4 white paper, brads, and white foam
- Arm Movement
 - Lego Mindstorms NXT set with a single motor mounted to a rack and pinion gear system to move the arm up and down
- User Interaction
 - Wizard of Oz to handle user input (e.g. arm movement)
 - When the user moves his/her arm, one of our team members presses buttons on the NXT Brick to make the corresponding movement for the puppet

Initial Design Prototype



Current Implementation



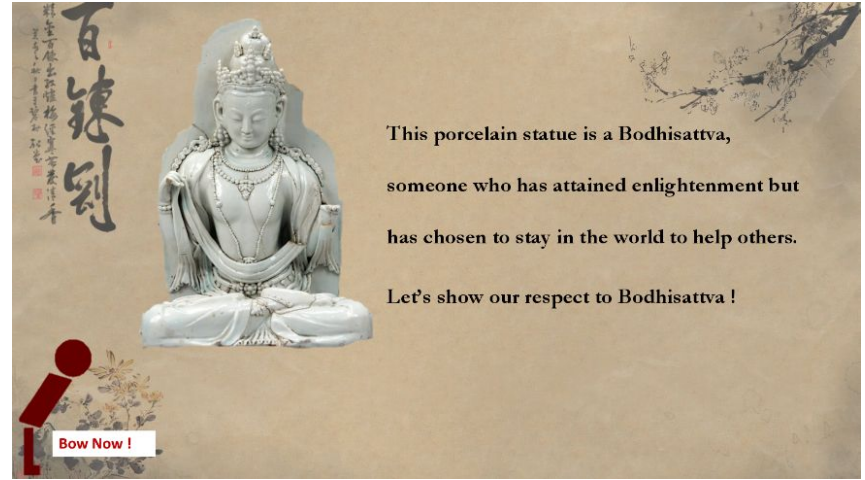
Current Implementation



Hi! I am a Chinese puppet.

I will be walking us through some parts of the China Hall exhibit, and you can move me like a real puppet as we venture along these stories!

Wave Now !




This porcelain statue is a Bodhisattva, someone who has attained enlightenment but has chosen to stay in the world to help others.

Let's show our respect to Bodhisattva !

Bow Now !

Conclusion and Future Work

- More movements to incorporate if system's confidence of user movements improves
 - E.g. Left out head movement because confidence was only around 40 - 50%
- Adding another puppet and/or additional movements will allow for a larger set of stories to tell
 - Could be built for multiple people or autonomously controlled
- Further work to allow multiple people to stand in a frame without inaccurate readings
- Having varieties of story themes (e.g. trading, hunting) to enrich the user experience with various types of cultural contexts



Thank You
Any Questions?

