




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

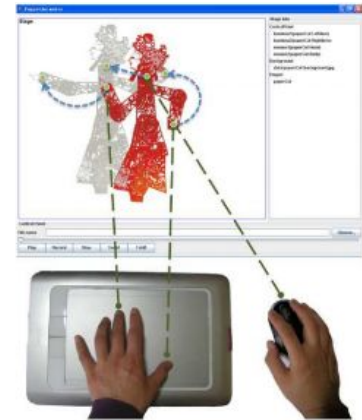
- **ShadowStory**

- 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?

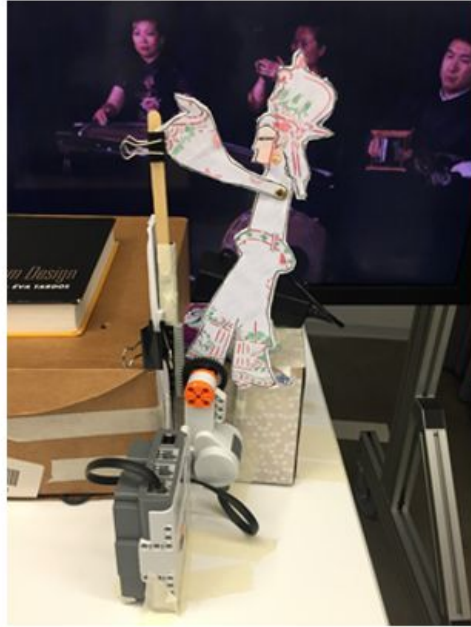
Theoretical Background

- 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

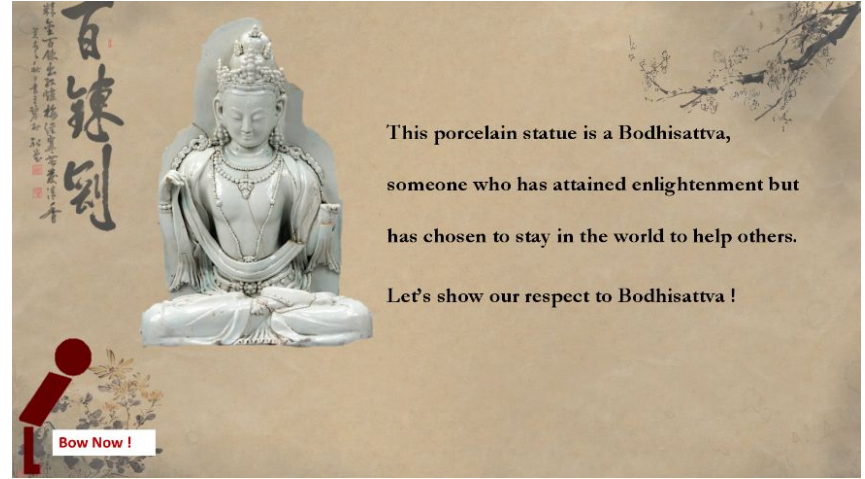
Initial Design Prototype



Current Implementation




Current Implementation



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?

