

nudge



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STUDENT DESIGN COMPETITION

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PROJECT OVERVIEW



Currently, we communicate across long distances primarily through three main methods: email and instant messaging, voice chat/phone calls, and video web conferences. However, these interactions are limited--we still lack the ability to physically interact with each other.

Nudge is a project that uses the digital world as a vehicle for physical communication. The Microsoft Touch Mouse combines the functionality of a traditional mouse with direct touch technology; Nudge harnesses these capabilities and pushes them one step further. We challenge the traditional concept of a mouse and elevate the mouse from a personal tool to an interpersonal social communication device. Further, we experiment with new forms of telemanipulation, allowing users to physically communicate through space.

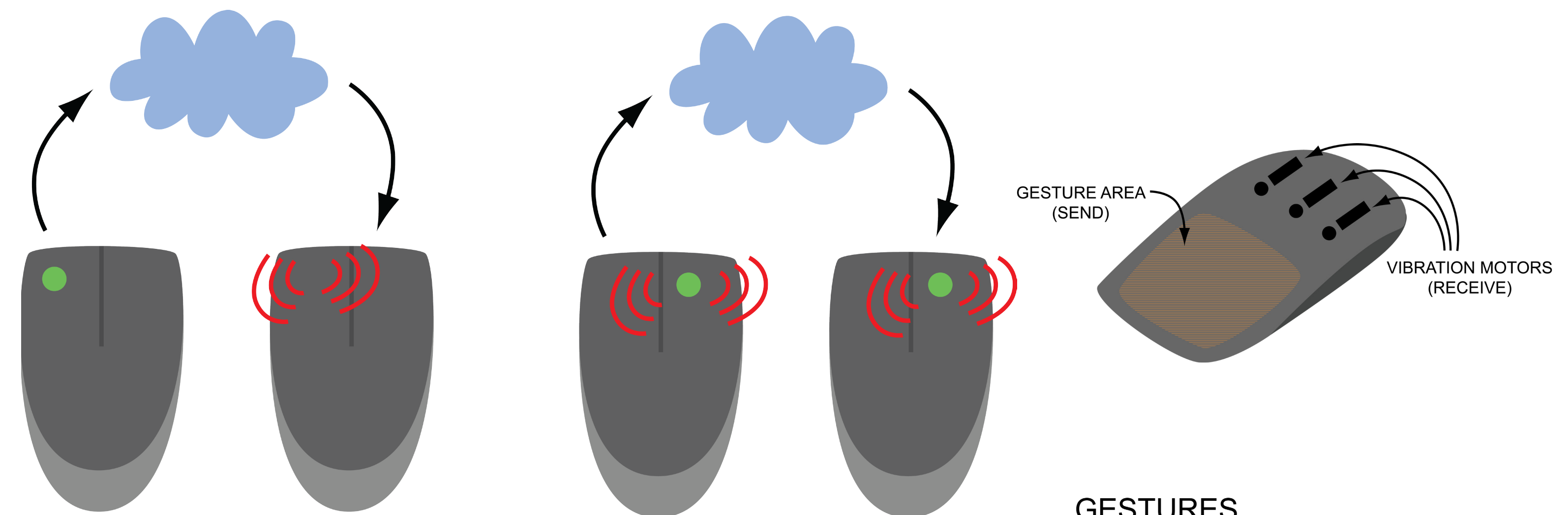
INSPIRATION

“Touch is often recognized as a fundamental aspect of interpersonal communication. Whether a strong handshake, an encouraging pat on the back, a nudge for attention, or a gentle brush of a shoulder, physical contact can convey a vitality and immediacy at times more powerful than language. [...] Yet while many traditional technologies allow communication through sound or image, none are designed for expression through touch.”

Scott Brave, Hiroshi Ishii, and Andrew Dahley
Tangible Interfaces for Remote Collaboration and Communication



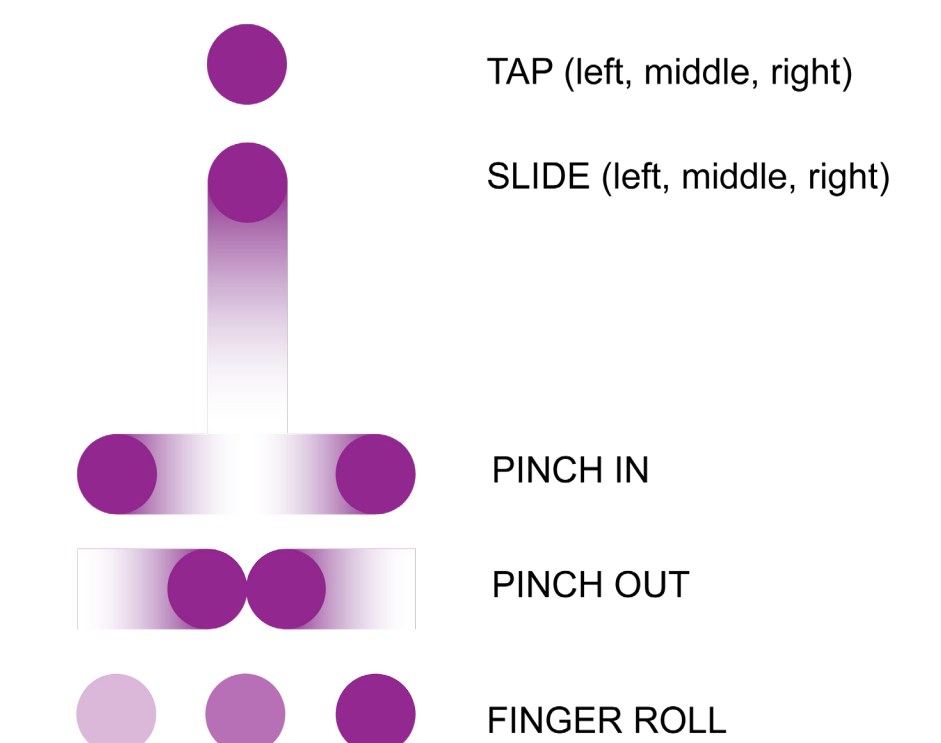
PROJECT SPECIFICS



Hey, Listen! (Left) In this mode, a user can gesture on the mouse, and the gesture will be transmitted immediately to the partner mouse through vibrations. This mimics a physical tap to grab someone's attention.

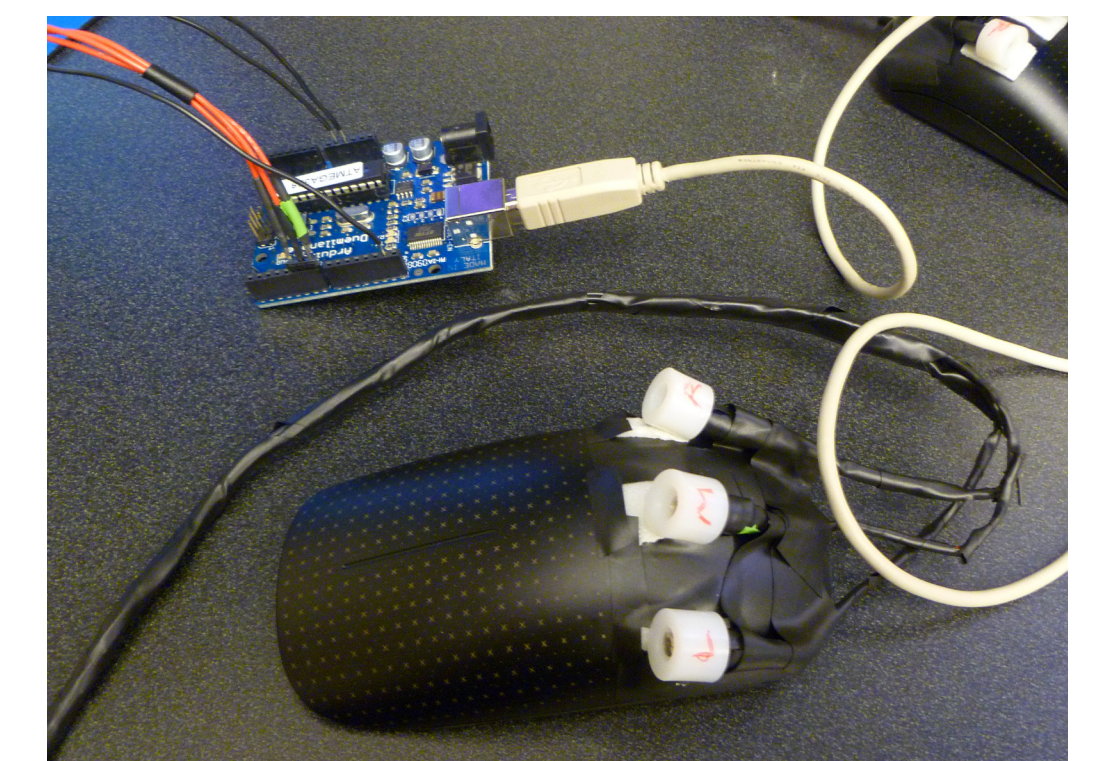
Holding Hands (Right) When both users' fingers are touching their respective mice at the same location, both mice will vibrate. We imagine that this simulates the experience of holding hands.

GESTURES



IMPLEMENTATION

Our project's gesture recognition algorithms parse the TouchMouse's raw pixels and are written in C#. We also use a Client-Server model, allowing the mice to communicate through the cloud. This affords interaction across arbitrarily large distances. Finally, the vibration motors are powered and programmed through the Arduino hardware and IDE in Processing Language.



FUTURE WORK

Real Touch: add haptic feedback that feels more like a real touch (to replace vibrations)
Remove Displacement: remove displacement of vibrations from position of original touch
Go Wireless: use Bluetooth to control the vibration motors

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