**Objective**

I’m a good painter!

But, I can’t use a computer well...

In the real world...

- Use good painting tools
- Paint on the target directly
- Hold the target while painting

Not only 2D but also 3D object

**Our purpose**

Develop a painting system that imitates painting in the real world

**+ Requirements**

- Intuitive device
- Direct operation
- Painting on real objects

I can paint in a similar way to the real world!

**What’s ToolDevice*?**

- A set of interactive devices
- Uses a metaphor of existing tools

**Advantages**

- Guides users to the correct operation
- Provides intuitive operation

**Application: Painting on real ceramics**

**Instruction**

1. Change/Select the brush type
2. Pick a color & add water
3. Mix colors
4. Paint

**+ Examples**

- TweezersDevice (UIST08)

**+ Implementation**

- **BrushDevice: a kind of ToolDevice**
  + Concept
    - Imitates the shape of a paintbrush familiar to many people
    - Realizes subtle expressions in virtual reality as well as in the real world
  + Real paint brush characteristics
    1. **Brush shape**
       Most paintbrushes fall into two categories:
      - Round brush: for painting in detail
      - Flat brush: for painting large areas uniformly
    2. **Brush stroke**
       Stroke weight, opacity, or smoothness etc.

When users want to change the stroke weight...

Press the brush against the canvas

**+ Examples**

- TweezersDevice (UIST08)

- **Daichi’s artworking: Enjoyable painting and handcrafting with new ToolDevices**

Daichi’s artworking: Enjoyable painting and handcrafting with new ToolDevices


- Brush type ID
  - Liner brush
  - Flat brush
  - Round brush

- Changeable

- It can detect bending direction

- Pressure sensor
  - Analog stick controller

- **DAICHIS’S ARTWORKING: ENJOYABLE PAINTING AND HANDCRAFTING WITH NEW TOOLDVICES**


- **Demonstrating now!**

- Wet enough
  - A puddle appears at the stroke end

- Not wet enough
  - The stroke lacks smoothness

- **Advantages**
  - Guides users to the correct operation
  - Provides intuitive operation

Daichi's artworking:
Enjoyable painting and handcrafting with new ToolDevices
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Abstract

We introduce a handcrafting application imitating “woodworking” in the real world. In conventional systems with a mouse and a 2D display, 3D digital modeling is not so easy for novices. We solve this problem by using a metaphor of woodworking and providing ToolDevice in the mixed reality space.

Background

- 3D modeling operations are not easy
  - Complex GUI (menu, icon...)
  - 2D input (Mouse)
  - 2D output (Monitor)

Approach

- Imitate handcrafting in the real world
- Mixed Reality
- ToolDevice
- Firstly, we developed woodworking demo

ToolDevice
(Tweezers, Knife, Hammer)

Interaction

- Pick & Move (TweezersDevice)
  - Bring it close to object
  - Pick & Move
  - Release

- Cut (KnifeDevice)
  - Push
  - Slide
  - Release (Cut)

- Join (HammerDevice)
  - Place
  - Tap (Joined)

System

Scene of Operations
(Pick & Move, Cut, Join)

Artworks