Week 10-1
Low-Fidelity Prototyping

SFWRENG 4HC3/6HC3 Human Computer Interfaces

** Slides adapted from previous instructors of COMPSCI/SFWRENG 4HC3/6HC3 and the COMPSCI 5115 course from University of Minnesota*

McMaster University

Week 10 Overview

- **Monday**
  - Low-Fidelity Prototyping
- **Wednesday**
  - Interactive Prototyping
- **Friday**
  - Interface Design Principles and Patterns

What is a Prototype?

Definition (from m-w.com):

- A first or early example that is used as a model for what comes later

A prototype is **any early example** used to help **evaluate or further design an idea**

Why Prototype?

- **Exploration with lower investment or commitment**
  - In many cases, investment = commitment
- Prototypes are **easier to discard, to change, to replace**
- Prototypes also can **elicit more significant, constructive feedback**

How to Prototype?

Type of prototype depends on the **questions you want the prototype to address**:

- Jeff Hawkins' block of wood
- Back of a napkin
- More detailed sketches, storyboards
- Wireframes
- Executable prototypes (level of function …)

What to Prototype?

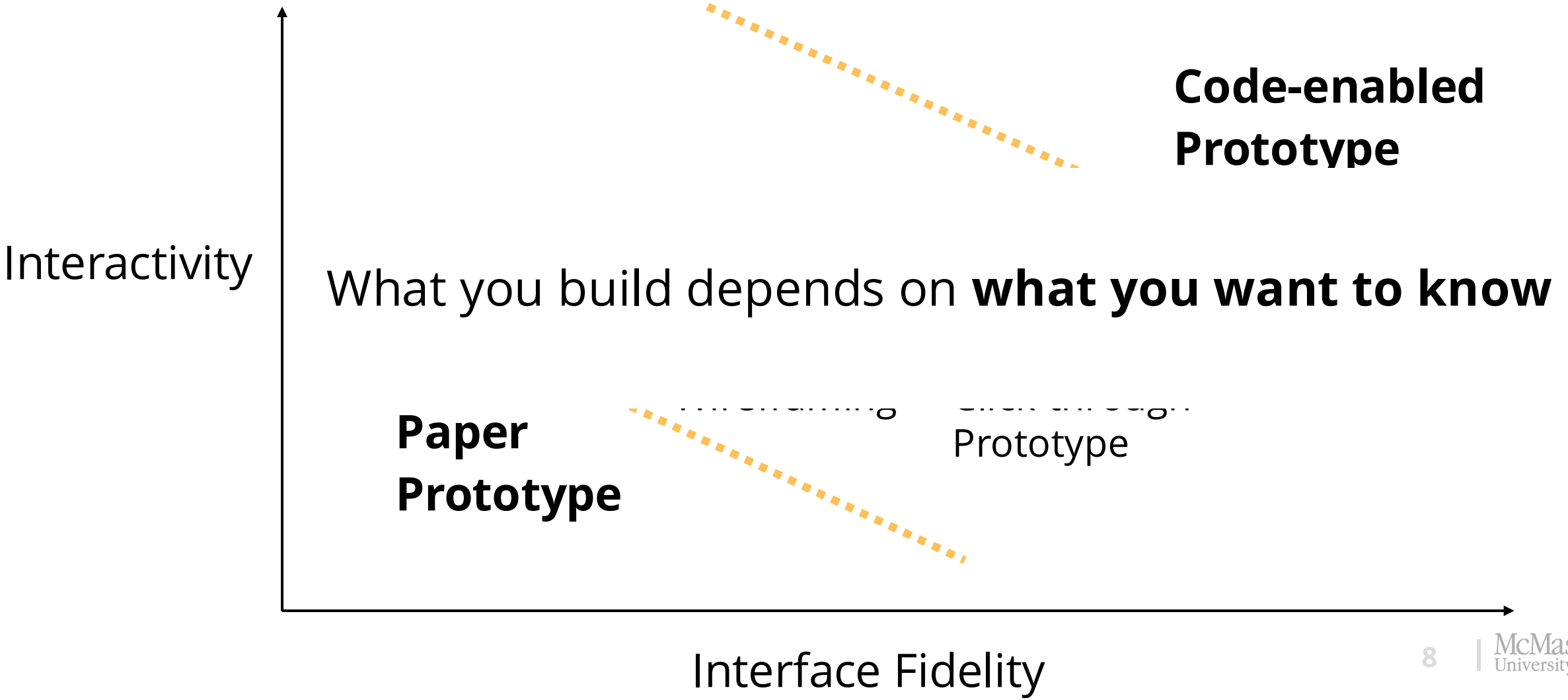
What you build depends on **what you want to know**:

- Is the concept useful?
- Is the tool appealing?
- Is the tool useful? Usable?
- A particularly tricky interaction?
- And what type of evaluation you'll be doing with that prototype

Prototype: in practice

- **Background:** design a multi-platform digital tools to help doctors and nurse record and create patient daily plans in the ICU
- **Paper Prototype** (printed wireframe)
  - Understand the concept and information
- **Interactive Prototype (interactive text input)**
  - Understand whether it is useful and usable
  - Is the interaction feasible

Low-High Fidelity Prototypes



Prototyping Lectures Overview

- This week focuses on **digital interface (screens)**
  - Low-high fidelity prototyping
    - **Techniques** for paper, wireframing, interactive
    - **Tools** like Figma, Axure, Marvel
  - Design principles and patterns
    - Design guidelines, interaction patterns
  - Interface framework and technologies
    - Some frontend knowledge
- Discuss prototyping **beyond screens**
  - Wearable, smart home devices, automotive

Limits of Prototyping

Some things **needs to be experienced**:

- Virtual and Augmented Reality
- Real Reality (e.g., Amusement Park Rides)
- Novel Interaction Techniques
- Novel Form Factors

Limits of Prototyping

Know the limits of prototyping:

- The “block of wood” could test Palm Pilot’s **form factor**, but not the **effectiveness** of its input mechanisms.
- Non-functioning prototypes can help understand what it a VR headset feels like, but not what it is like to use it.
- Artistic drawing programs can’t be fully evaluated **without** having an artist attempt to create art with them.

Limits of Prototyping

Be thoughtful

- As you're planning a design process, think about **the right level and use of prototypes.**
- Use prototypes to **reduce risk cheaply and early**.
- Recognize that even "full implementations" can still be **lower-cost partially functioning prototypes**.

Sketching: In-Class Exercise 7

Take 5 minutes and pick one or more following prompt to do some quick sketches:

- User interacts with a mobile device
- User interacts with a smart home speaker
- User interacts with a robot
- User interacts with a desktop

Feel free to include multiple frames for a prompt or give the prompt more context (what task is user trying to complete? What is the context and environment?)

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Low-Fidelity Prototyping: What

What is lo-fi prototyping?

- A group of **techniques** used to **rapidly present a graphical concept of product**.
- **Sketchy and incomplete**, that has some characteristics of the target product but is otherwise simple.

Low-Fidelity Prototyping

Paper prototyping
- Fastest, easiest and cheapest lo-fi prototyping technique

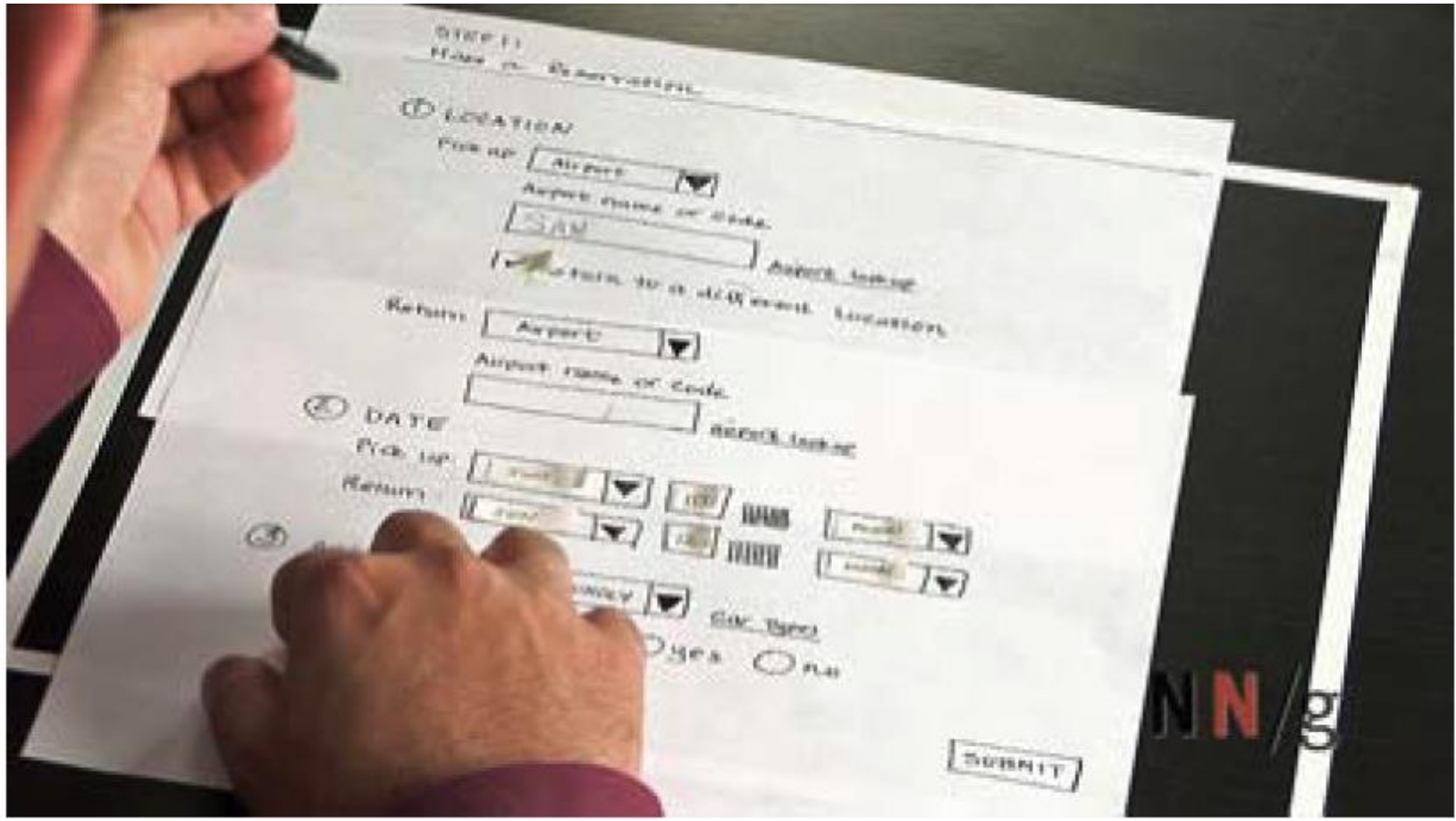


**Image from NN/G video*

Low-Fidelity Prototyping: When

When to use lo-fi prototyping?

- You know **what your app will do**
- You know **what features** it should have
- But, you still need to figure out **how to structure functionality and features** and **want to quickly test the concepts**
- How? **Low-fidelity prototyping!**

Low-Fidelity Prototyping: Why

Why lo-fi (paper) prototyping?

Very cheap to implement, test and change

- **Not get caught up** in details of the prototype
- **Enables the involvement of developers, designers, users and other stakeholders** very early in the design process

Low-Fidelity Prototyping: Evaluate

Researchers use role playing to test how end users will interact with the product

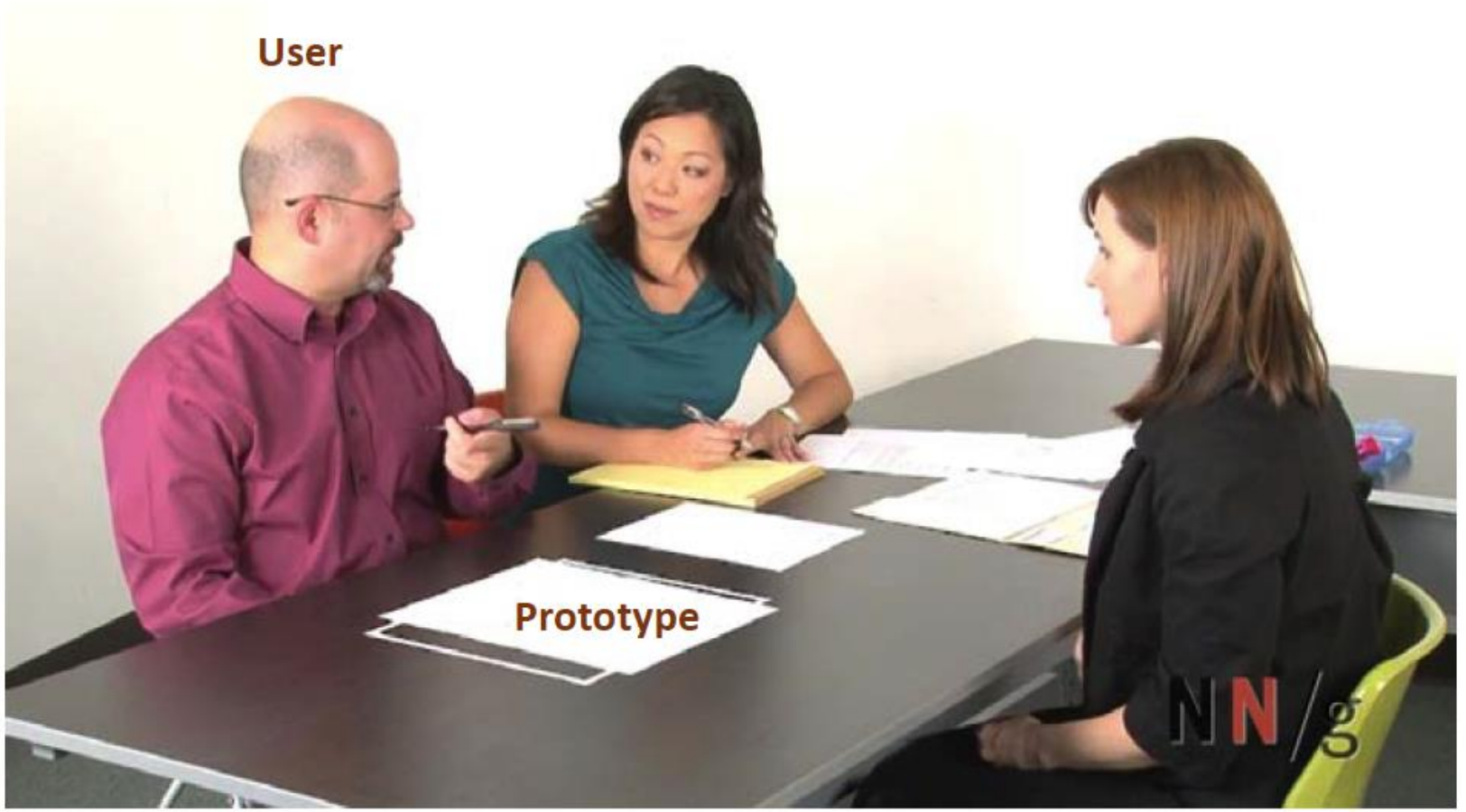


**Image from NN/G video*

Low-Fidelity Prototyping: Evaluate

Researchers use role playing to test how end users will interact with the product

**Image from NN/G video*

Low-Fidelity Prototyping: Evaluate

Researchers use role playing to test how end users will interact with the product

- Such simulation sometimes can also be facilitated by tools

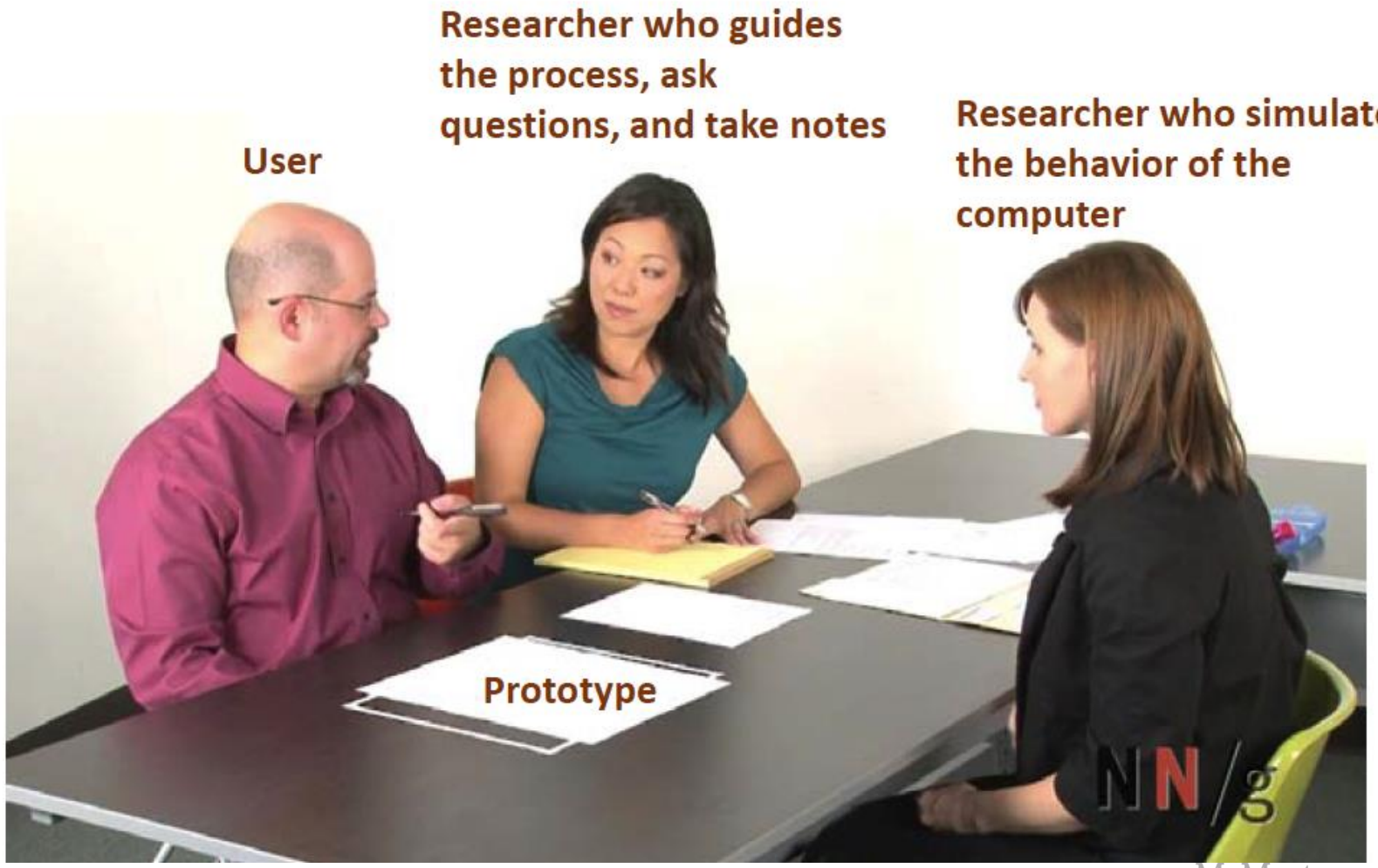


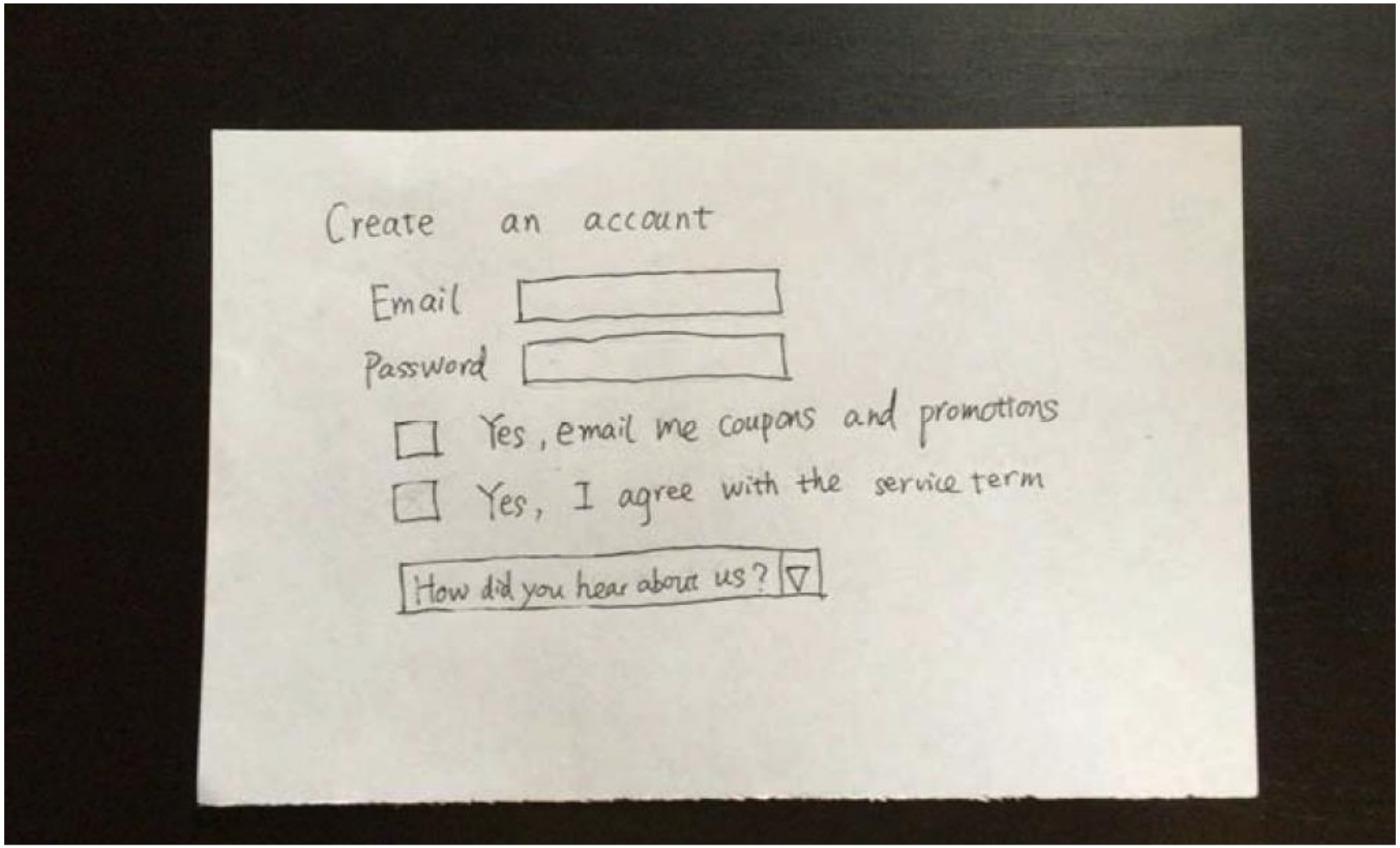
*Image from NN/G video

Paper Prototyping: How

- **Materials** for creating paper prototypes
  - Pen and paper
  - Sticky notes and tapes
  - Scissors
  - Ruler (sometime)
- **Some examples** of paper prototypes
  - Examples in this video are drawn from “Paper Prototyping, How to Create Prototypes and Test with Paper” by NN/G
  - Photos taken from materials created by University of Minnesota’s course in interface design

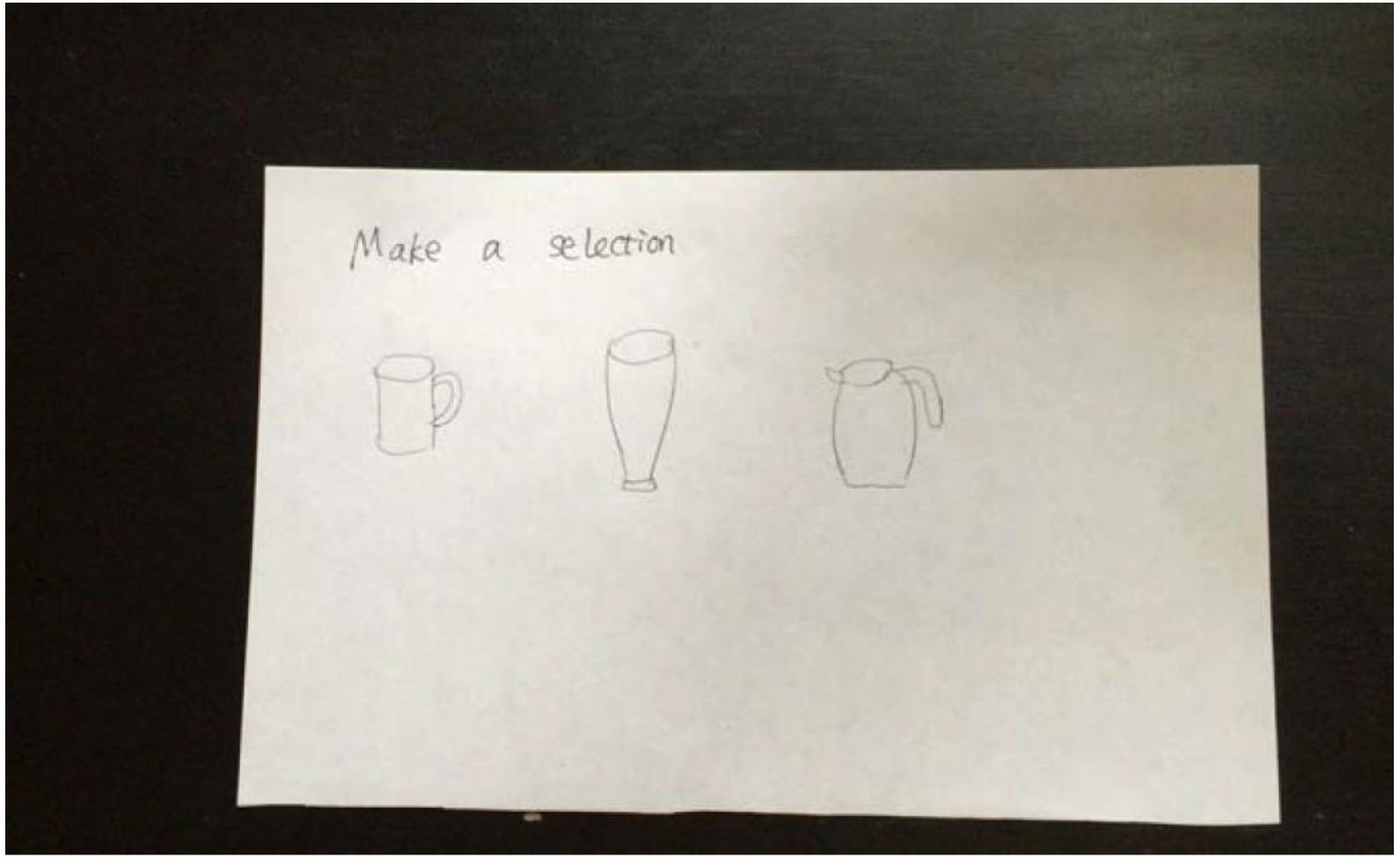
Paper Prototyping: Example

Basic Interfaces
(account creation)



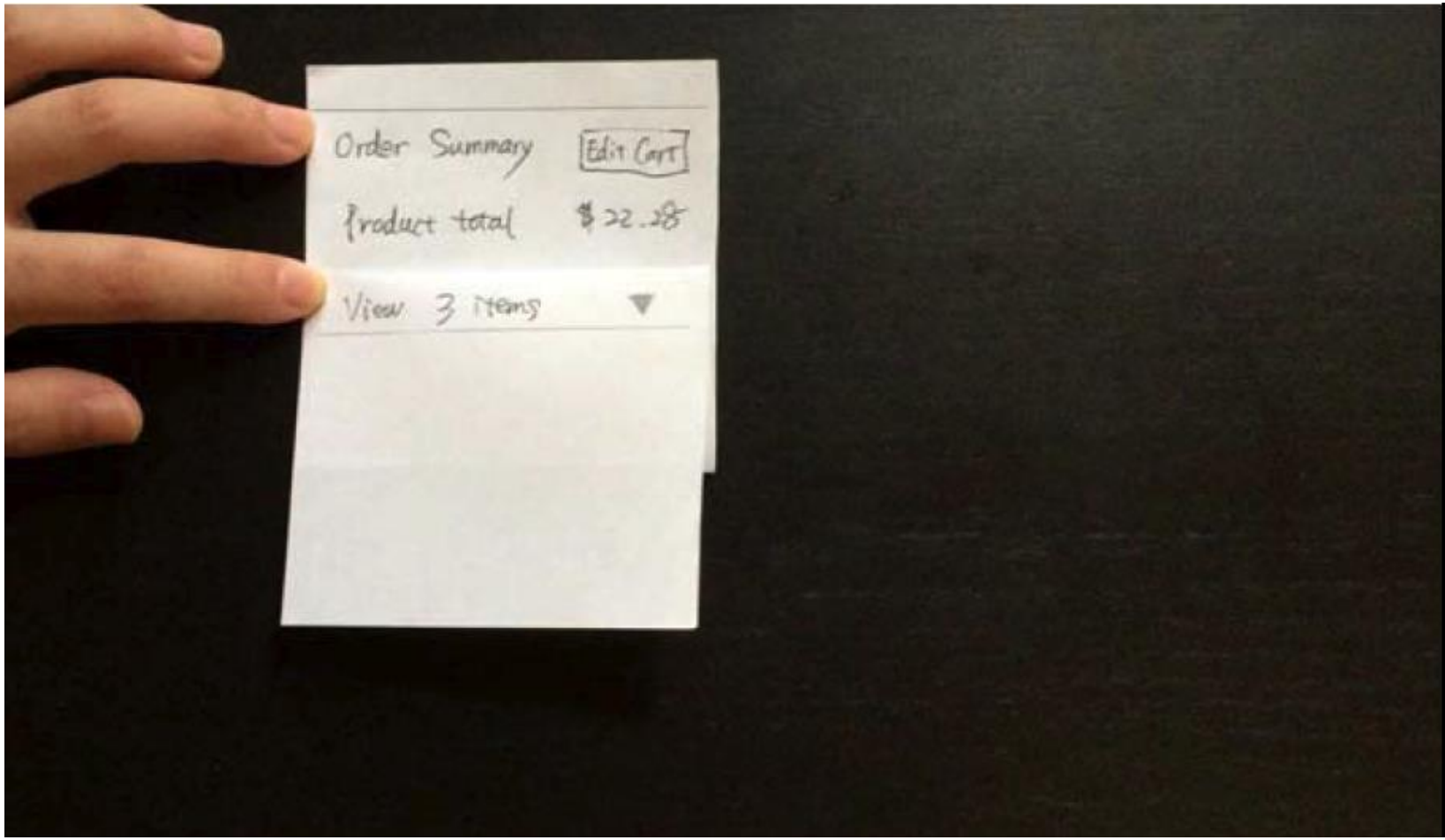
Paper Prototyping: Example

Basic Interfaces
(make selection)



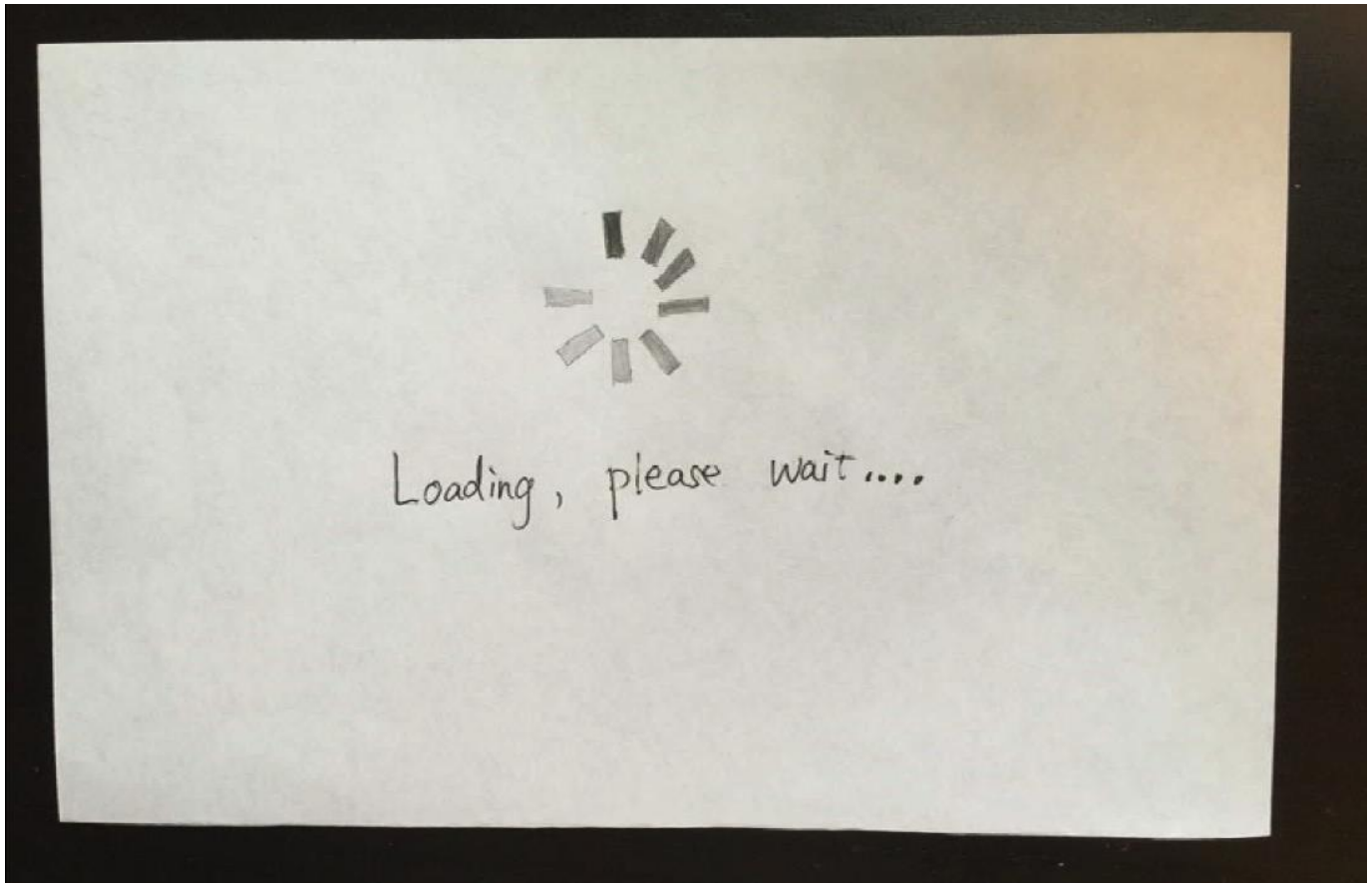
Paper Prototyping: Example

Sticky notes for interactive components



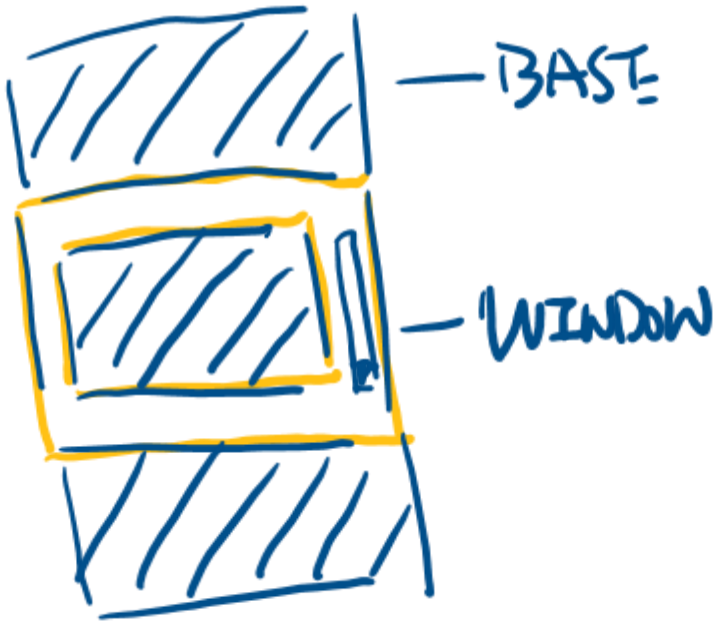
Paper Prototyping: Example

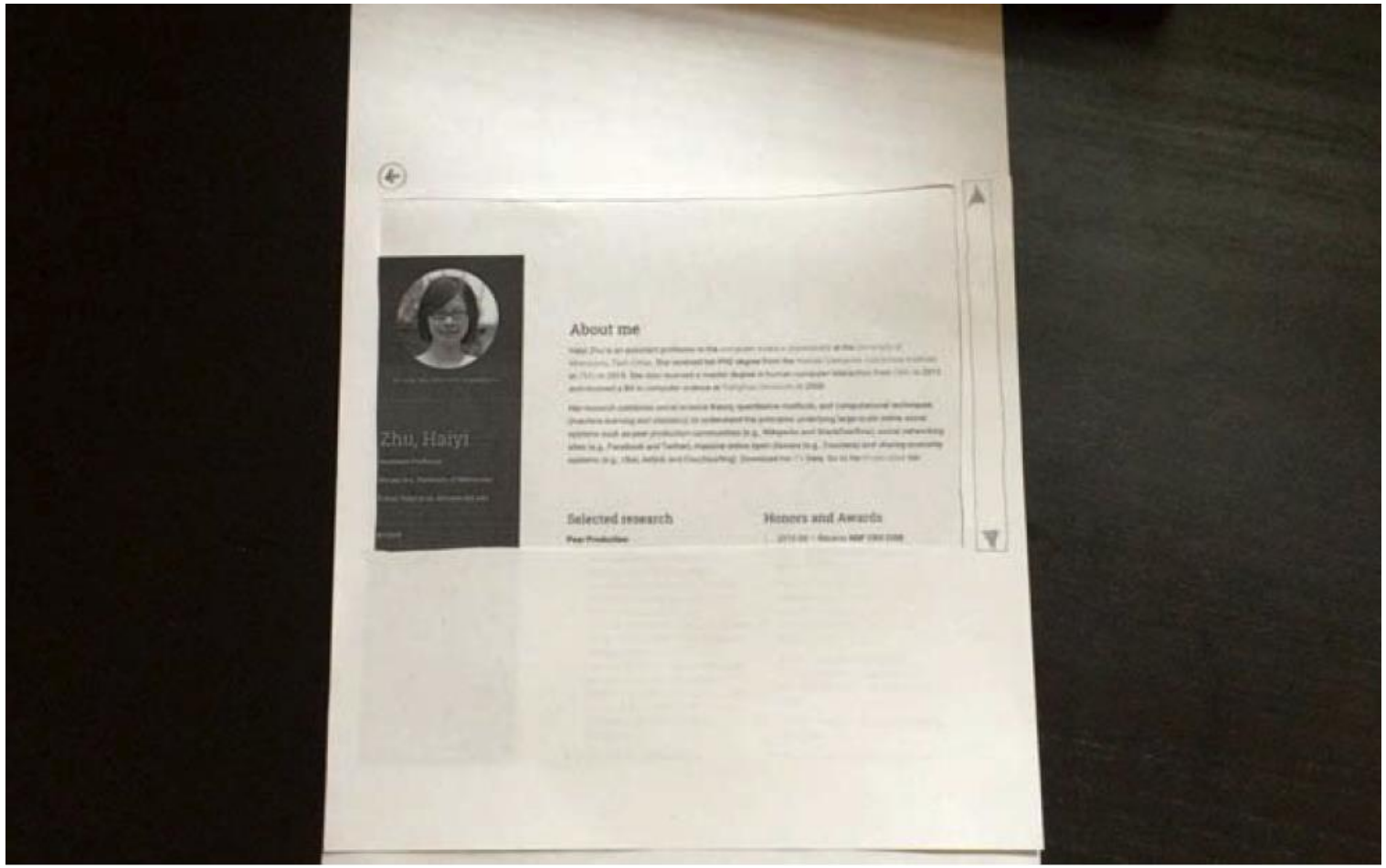
Drawing status



Paper Prototyping: Example

Page scrolling





Paper Prototyping Exercise

Take 10 minutes: Design **a tablet kiosk** interface for ordering a specific type of drinks (coffee, bubble tea, or tea) at a café:

1. **Sketch** the different screens of your interface
2. Using paper, post-its, etc., **design a "working" paper prototype.**
3. **Test this prototype** by yourself, making notes on the problems and potential design changes.

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- ~~Monday~~
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- **Wednesday**
  - **Interactive (tool-based) Prototyping**
- Friday
  - Interface Design Principles and Patterns