

Designing Usable Machine Learning-Based Applications

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Design Thinking



Design Thinking

A process in which we seek to **understand the user, challenge assumptions, and redefine problems** in an attempt to identify alternative strategies and solutions that might not be instantly apparent with our initial level of understanding.

-- Interaction Design Foundation

Design Thinking

Understand the user

User-centered mindset

Challenge assumptions

Prototyping and evaluation

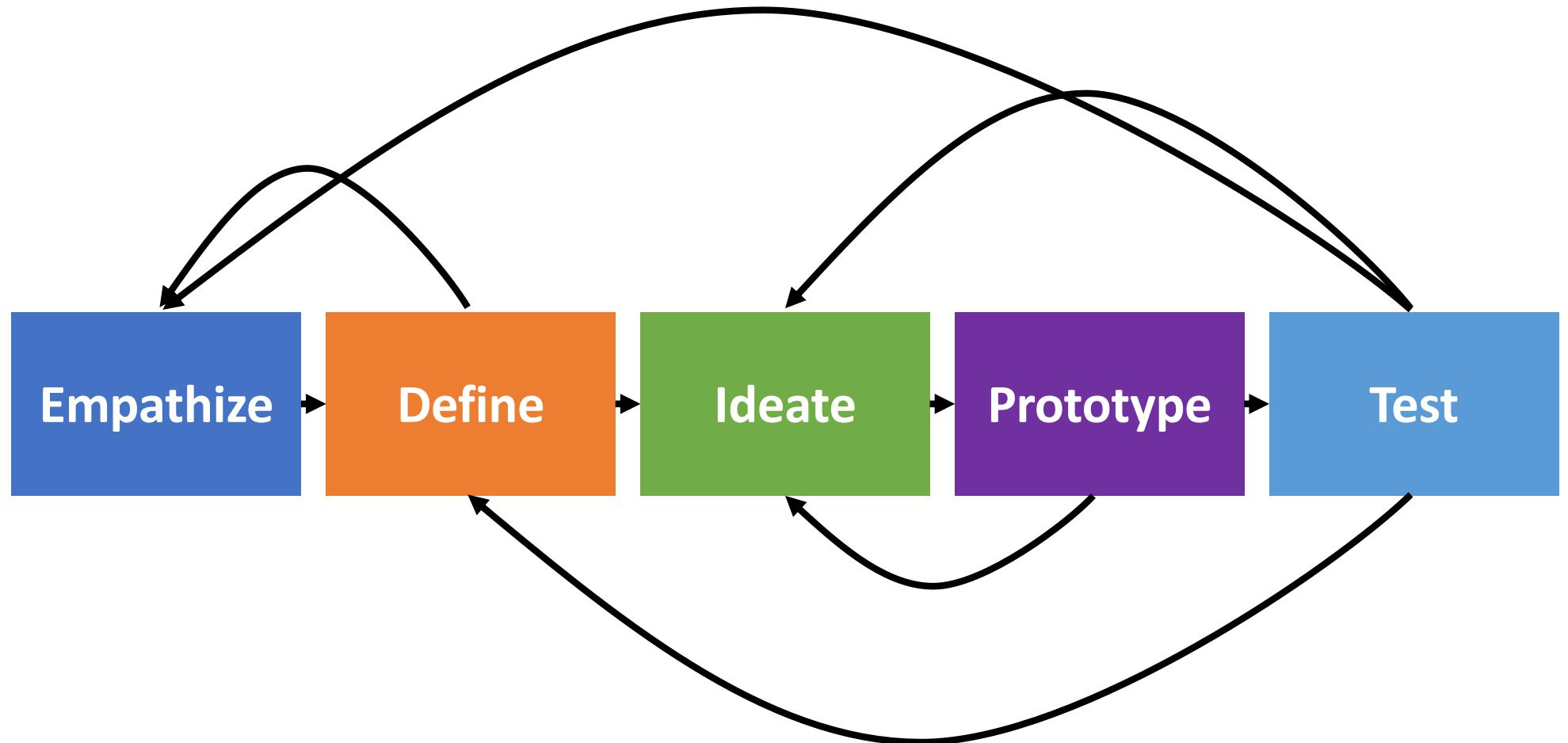
Redefine problem

Iteration

As opposed to...

- “We have this vision. Let’s jump in and brainstorm some solutions”
- “Our competitor just did X. How can we also do X (quickly)?”
- “We have this technology. What can we use it for?”

Design Thinking Activity



Design Thinking Activity

Goal: Design a gift-giving assistant chatbot...
for your partner.



Empathize

1 Interview

8min (2 sessions x 4 minutes each)

Notes from your first interview

As a starting point,
ask your partner to
tell you about the
last time they gave
a gift.



Switch roles & repeat Interview 1.

Empathize

2 Dig deeper

8min (2 sessions x 4 minutes each)

Notes from your second interview

Try to dig for stories, feelings, and values. Ask ‘WHY?’ often.

Switch roles & repeat Interview 2.

Define

Synthesize your findings into two groups:
(1) your partner's goals and wishes,
(2) insights you discovered.

3 Capture findings 3min

needs: things they are trying to do*

*use verbs

insights: new learnings about your partner's feelings/worldview to leverage in your design*

*make inferences from what you heard

Define

4 Define problem statement 3min



partner name/description

needs a way to

user's need

Surprisingly // because // but...

[circle one]

insight

Take a stand by
specifically stating
the meaningful
challenge you are
going to take on.

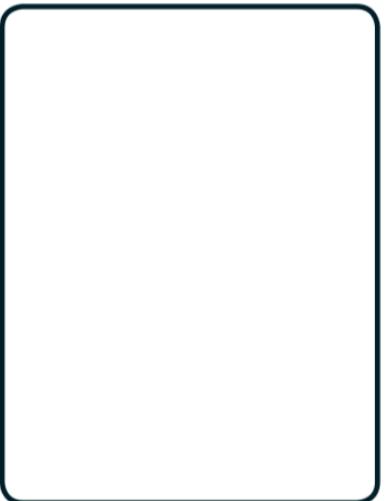
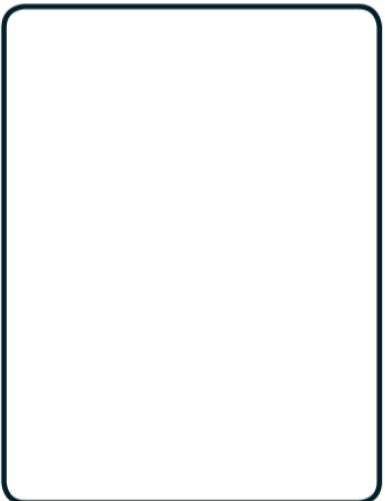
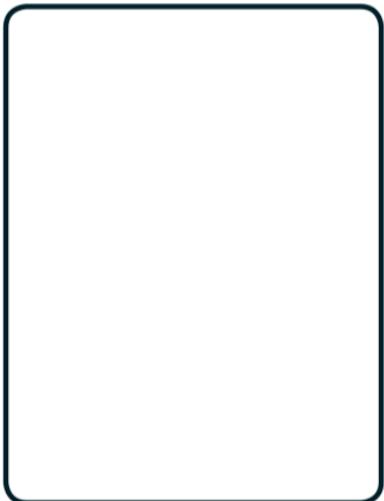
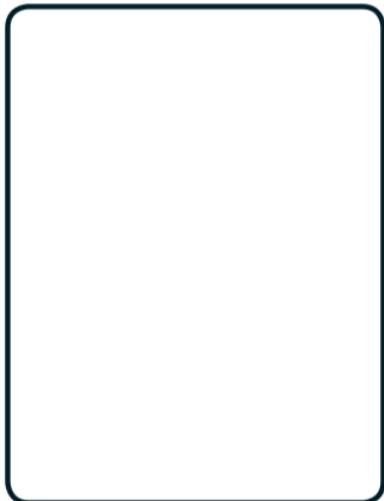
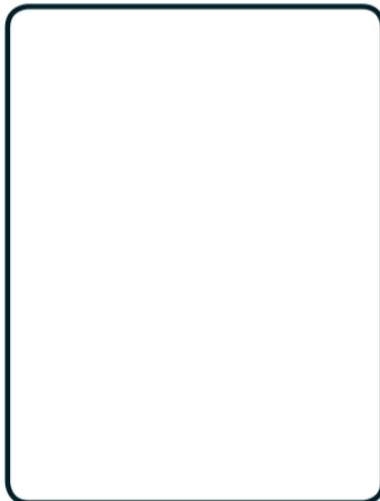
Ideate

- Focus on the new challenge that you have identified.
- GO FOR VOLUME! And BE VISUAL!
- Do not have to be a chatbot...

5 Sketch at least 5 radical ways to meet your user's needs. 4min

8

write your problem statement above



Ideate

Share and get feedback.
But DO NOT explain or defend your ideas!!

6 Share your solutions & capture feedback. 8min (2 sessions x 4 minutes each)

Notes

d. @@@@ @@@

Switch roles & repeat sharing.

Prototype

- This solution may be a variation on an idea from before or something completely new.
- Try to provide as much detail around your idea as possible.

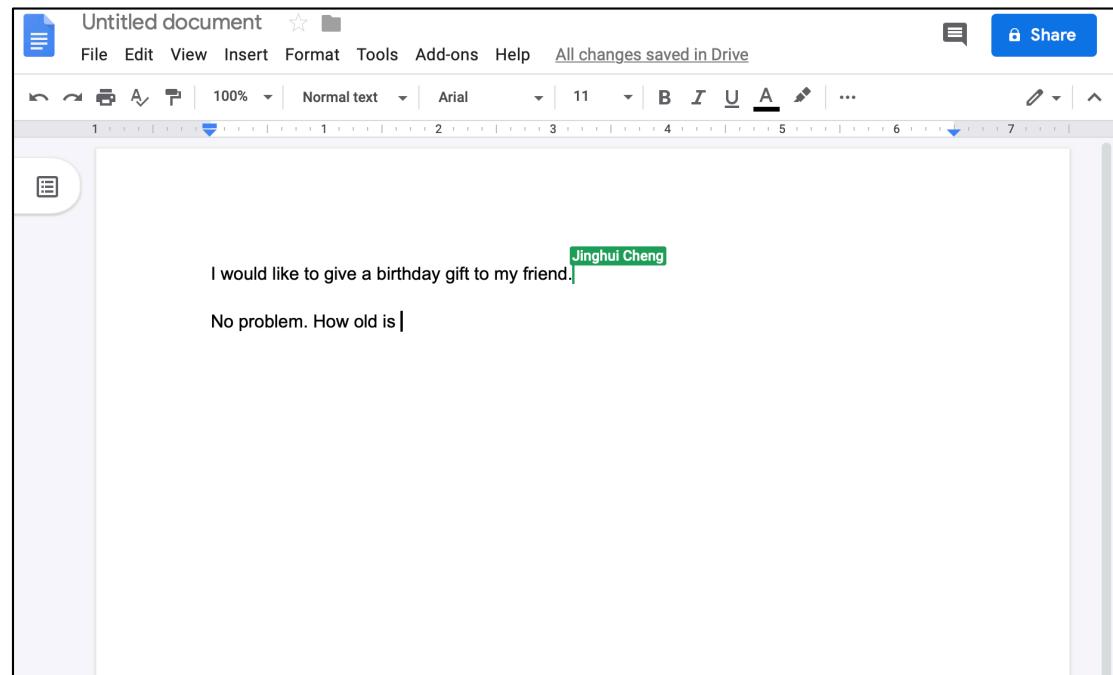
7 Reflect & generate a new solution. 3min

Sketch your big idea, note details if necessary!

Prototype

2 more minutes to build a Wizard-of-Oz prototype!

- Write down possible questions and requests from your partner.
- Write down the planned responses for each request.
- Sketch the user interface that may enhance the chatting experience.
- Create a Google Doc and share it with your partner as a testing platform.



Test

- Do a short Wizard-of-Oz test on the Google Doc.
- After the test, ask for the feedback from your partner.

8 Share your solution and get feedback (again). 8min (2 sessions x 4 minutes each)

✚ What worked...

■ What could be improved...

❓ Questions...

❗ Ideas...

Design Thinking Activity

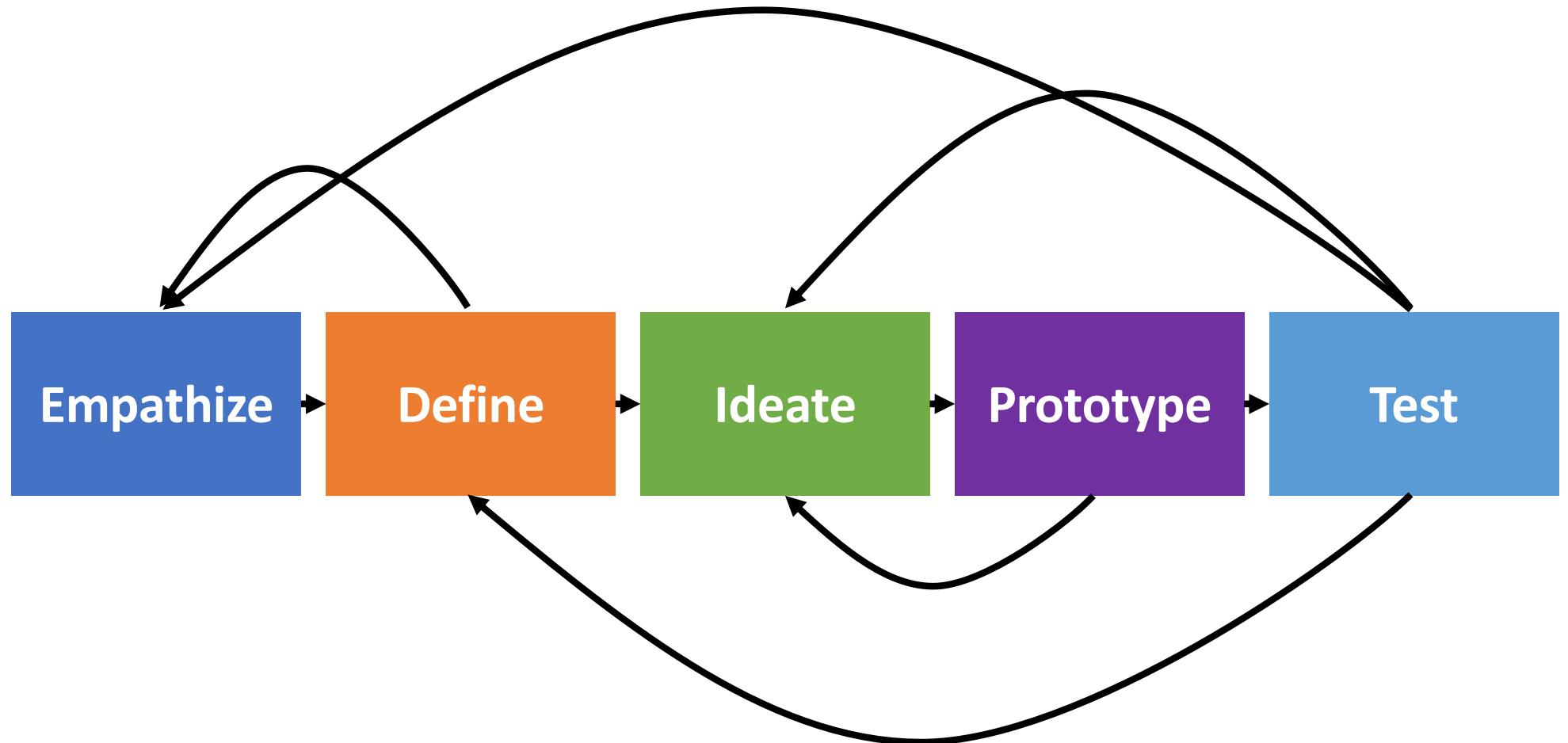
Share it with us...

- Send your prototype (the Google Doc and a photo of section 7 of the worksheet) to: jinghui.cheng@polymtl.ca with title “**IVADO_SEMLA_Design**”.
- Tell us about it...

How do you feel?

- What are the most difficult/important/interesting parts?
- How did the interviews/prototyping/iteration shape the design?
- Ideas other than a chatbot?

Design Thinking Activity





**Please recycle the papers if
you are not keeping them.**

Designing Usable Machine Learning Applications

Process

Risk Analysis

Early focus
on users

Creativity

Heuristics and
Guidelines

Iterative design

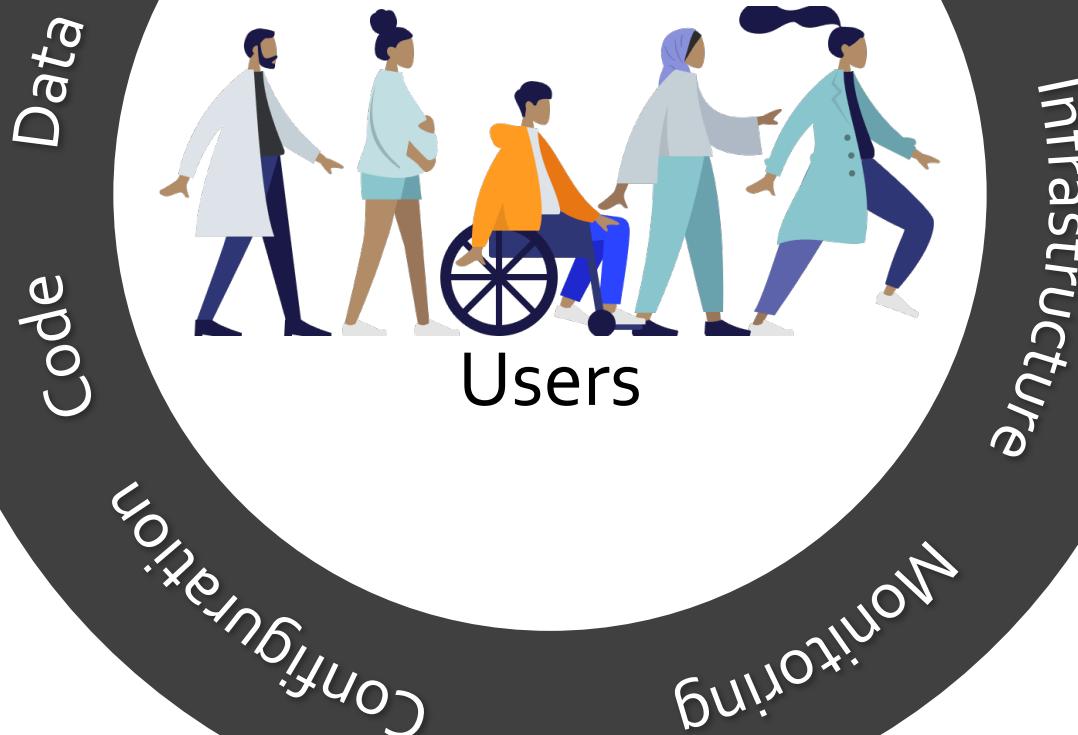
Goal
Orientation

Usability Testing

Measurement
& evaluation

Design Thinking

Machine Learning Application



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