

# Intro to Human AI Interaction

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# Logistics

- M2 Presentation (Nov 2<sup>nd</sup>)
- Assignment 2 (Release on Oct 31<sup>st</sup> and due on Nov 9<sup>th</sup>)
  - Peer review round (Nov 10<sup>th</sup> – Nov 12<sup>th</sup>)
  - Revise round (Nov 13<sup>th</sup> – Nov 15<sup>th</sup>)

A photograph of six diverse children (three boys and three girls) looking up and smiling at the camera. They are of various ethnicities and are wearing casual clothing like shirts and jackets. The background is plain white.

## User Needs

(Requirements Engineering  
and Human-Centered Design)

A close-up photograph of a white soccer ball with dark blue and black panels hitting the back of a white mesh goal net. The ball is positioned in the center-left of the frame, angled towards the right. The background is a blurred green field.

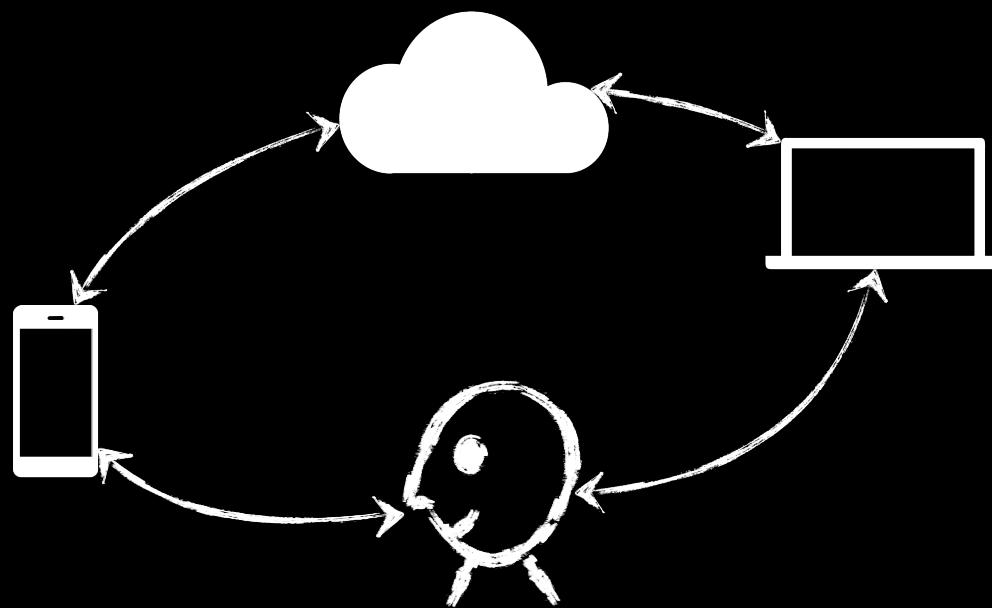
**System Objectives**  
(Requirements Engineering  
and Model Quality)

**User Needs**  
(Requirements Engineering  
and Human-Centered Design)

**Human-AI  
Interaction  
Design**

**System Objectives**  
(Requirements Engineering  
and Model Quality)

# WHAT do designers design?

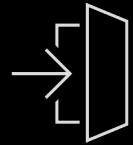


Interaction

Information flow

Emergence

# WHAT do designers design?



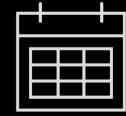
Onboarding



Interaction



Failure



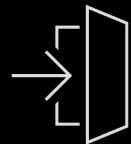
Evolution

# WHAT do designers design?



Mental  
Model

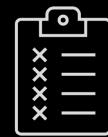
*Introduce  
and set  
expectations*



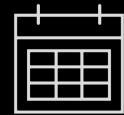
Onboarding



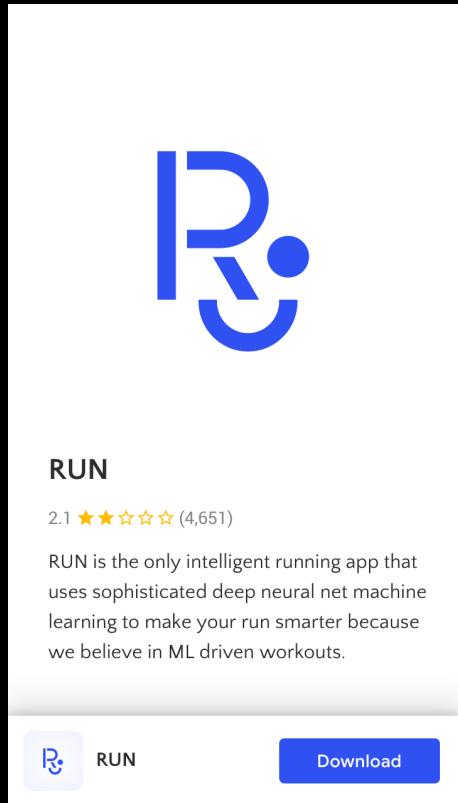
Interaction



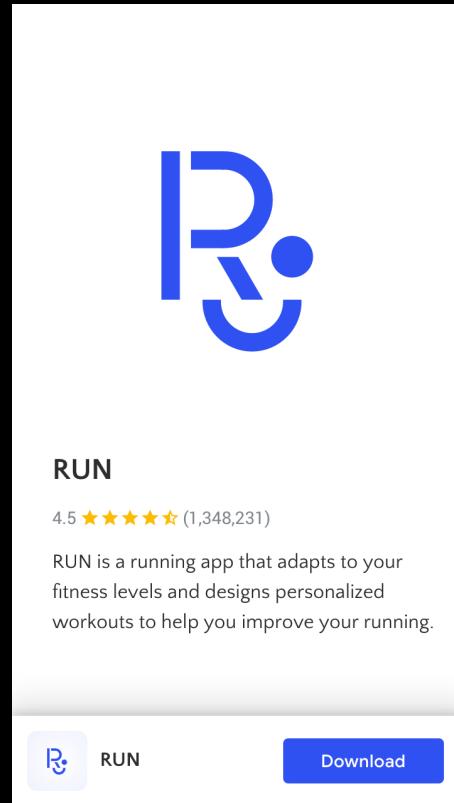
Failure



Evolution



*Version 1*

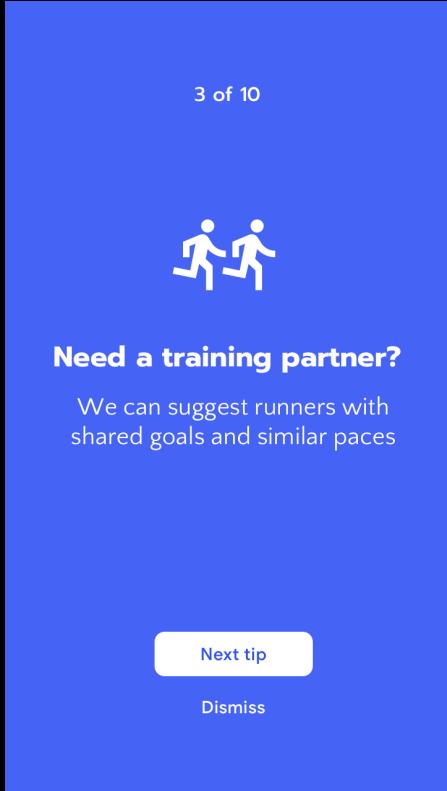


*Version 2*

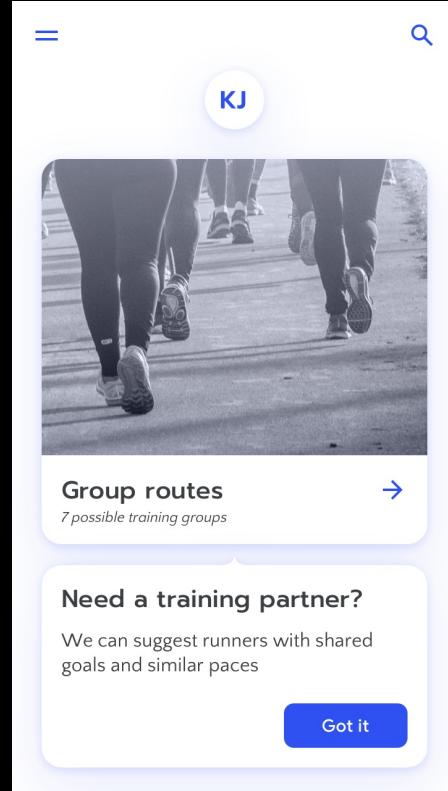
Make clear what the system can do.

Explain the benefit, not the technology

<https://pair.withgoogle.com/chapter/mental-models/>



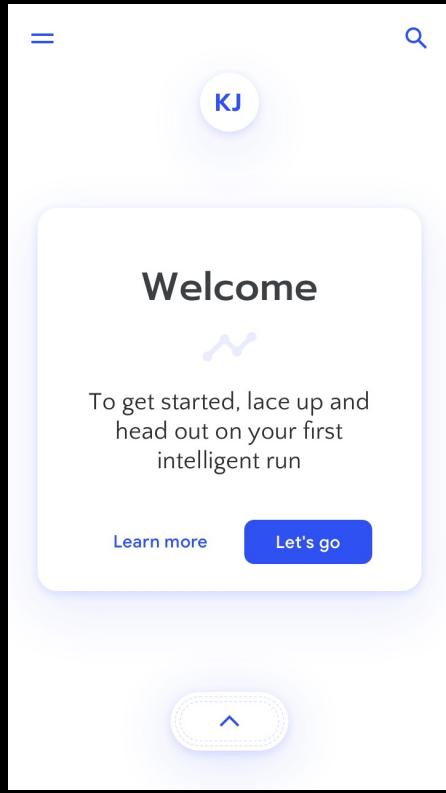
Version 1



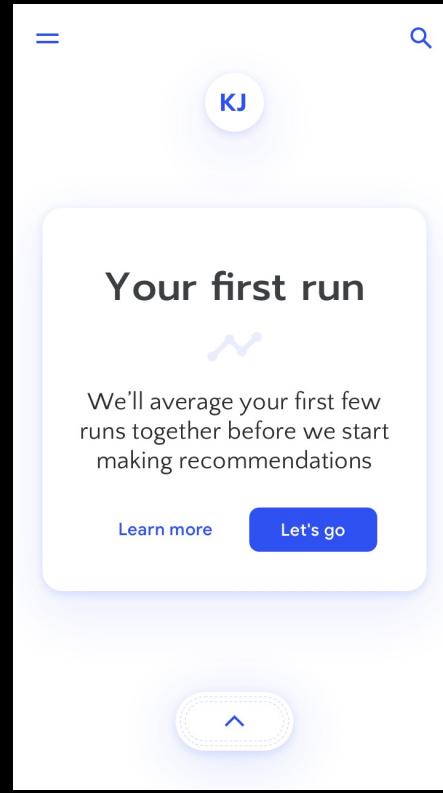
Version 2

Introduce an AI-driven feature at the moment when it is relevant to the user.

<https://pair.withgoogle.com/chapter/mental-models/>



*Version 1*



*Version 2*

Encourage experimentation and reassure users that experimenting won't dictate their future experiences

<https://pair.withgoogle.com/chapter/mental-models/>

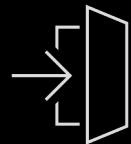
# WHAT do designers design?



Mental  
Model

*Introduce  
and set  
expectations*

*Communicate  
AI limits and  
capabilities in  
context*



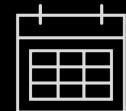
Onboarding



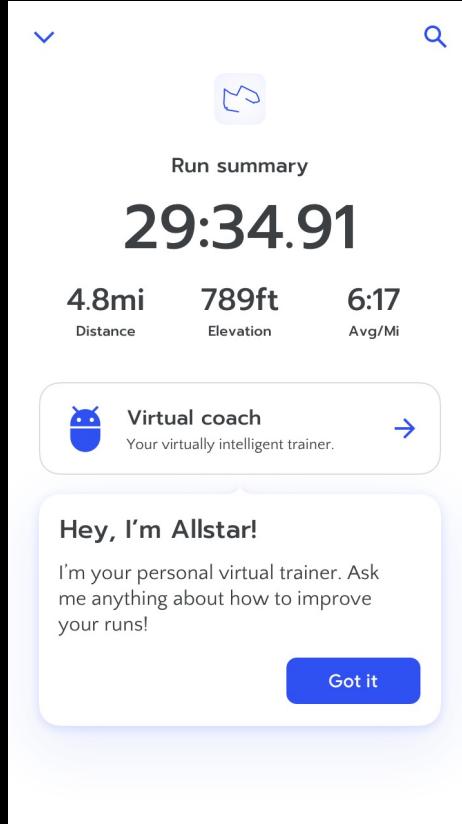
Interaction



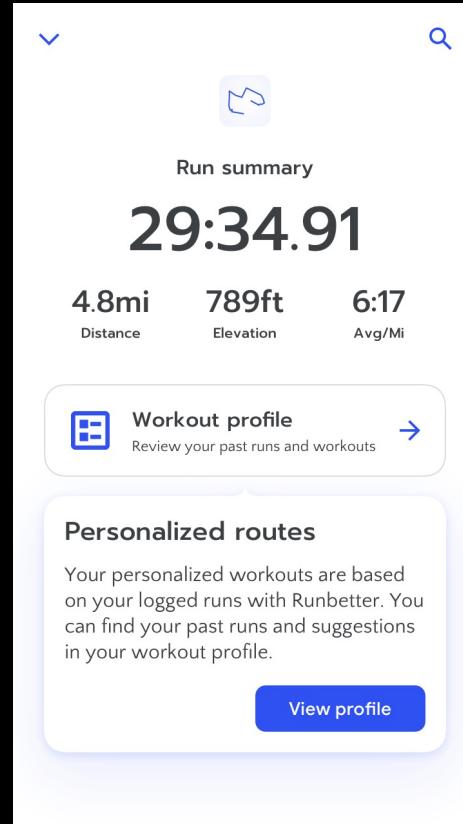
Failure



Evolution



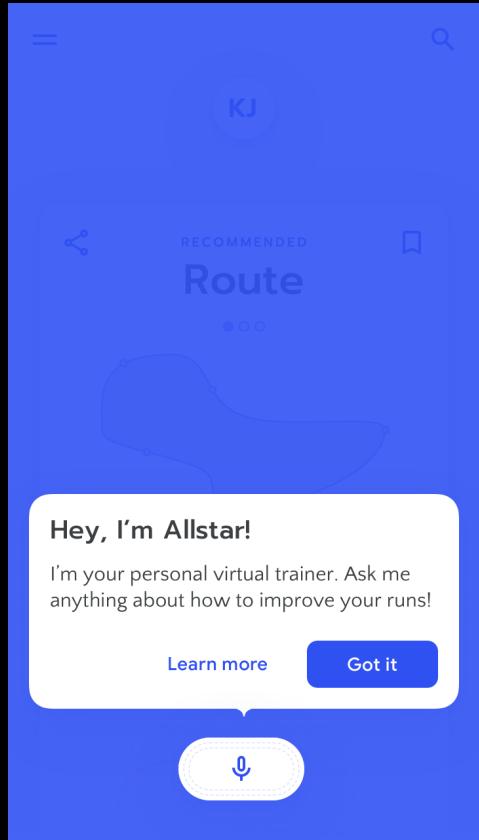
Version 1



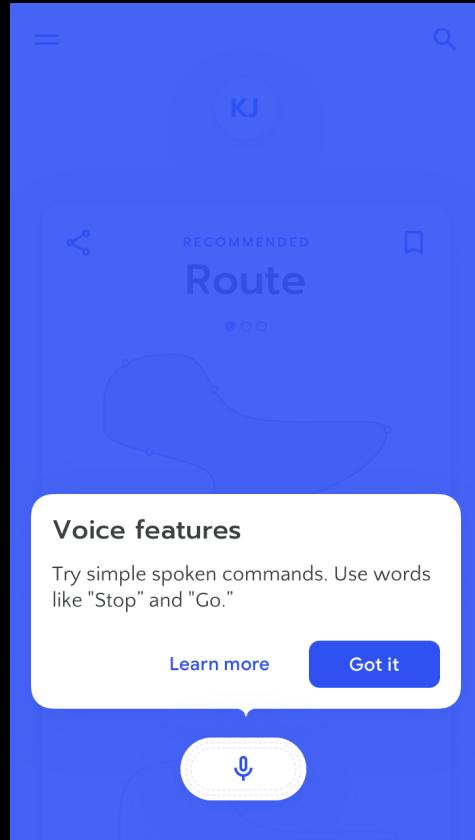
Version 2

Choose the level of humanization based on the AI's capacity

<https://pair.withgoogle.com/chapter/mental-models/>



Version 1



Version 2

Cue the correct interactions.

Reinforce the right mental models.

<https://pair.withgoogle.com/chapter/mental-models/>

# WHAT do designers design?

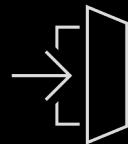


Mental  
Model

*Introduce  
and set  
expectations*

*Communicate  
AI limits and  
capabilities in  
context*

*Fail  
gracefully*



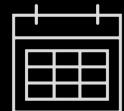
Onboarding



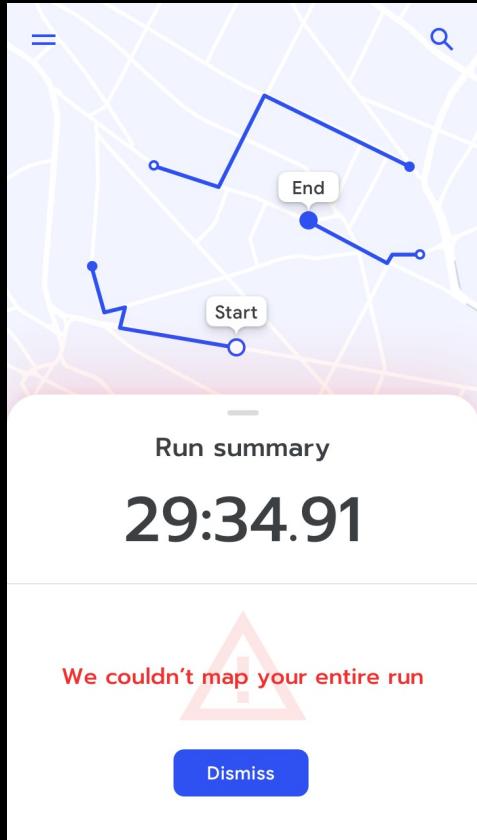
Interaction



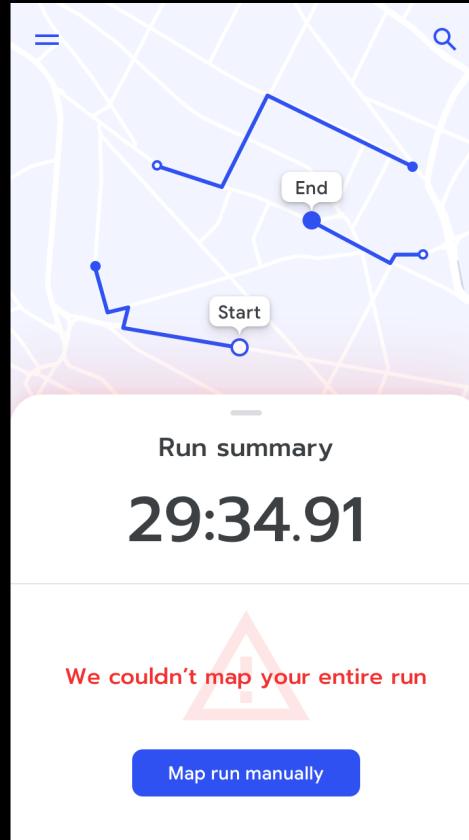
Failure



Evolution



Version 1



Version 2

Let users know an error occurred and why.

Make it easy to recover when AI fails

# WHAT do designers design?



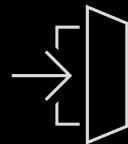
Mental  
Model

*Introduce  
and set  
expectations*

*Communicate  
AI limits and  
capabilities in  
context*

*Fail  
gracefully*

*Plan for Co-  
Learning*



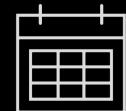
Onboarding



Interaction



Failure

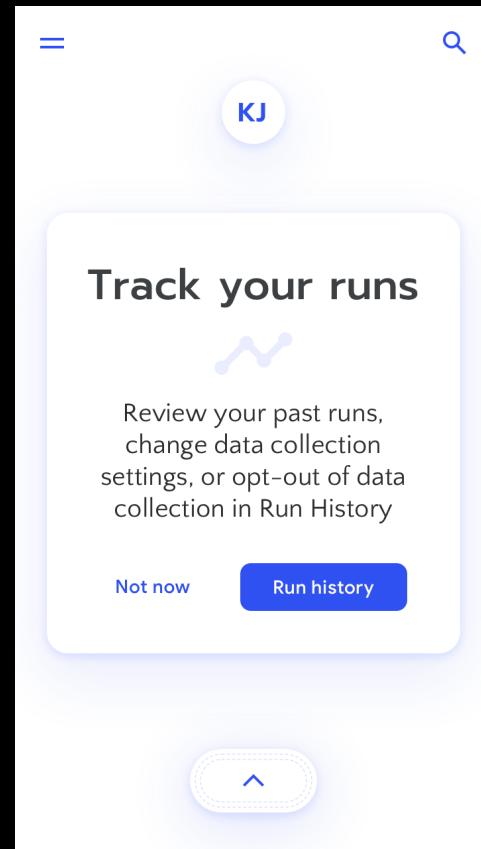


Evolution

# Implicit Feedback

- Telemetry design

Let the user know you  
are collecting it, and  
get permission



# Explicit Feedback

Prompt in context.

Explain how continually teaching the system  
benefits the user.

Thank you for your feedback!

OK

Communicate scope & time to impact!

# WHAT do designers design?



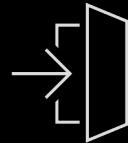
Mental  
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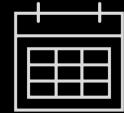
Onboarding



Interaction



Failure

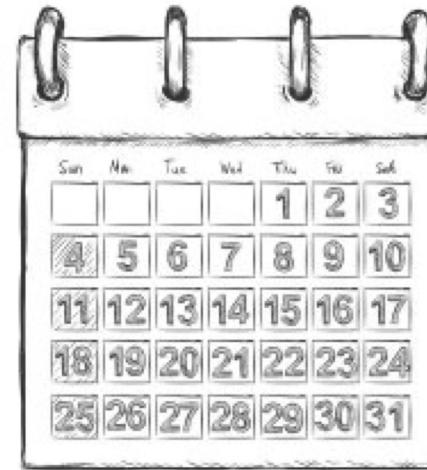


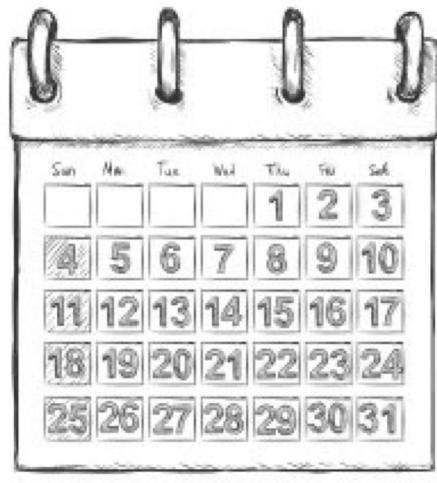
Evolution

# Activity from RE lecture

Design a schedule management experience for

**The person next to you**





## Draft your onboarding message

This is \_\_\_\_\_  
the product or feature

and it will help you by \_\_\_\_\_  
core benefit

It is NOT able to \_\_\_\_\_  
primary limitation of AI

Over time, it will change to become more  
relevant to you. You can help it get better by \_\_\_\_\_

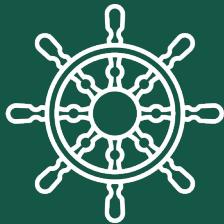
actions users can take to help the system learn

# Self-assessment of your draft

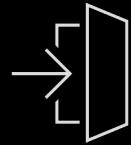
- Is it easy to experiment with the process in the “You can help it get better by...” phrase?
- Is the description specific and explicit about how the user will interact with and improve the AI over time?
- Are we specific and explicit about how the system will change over time and how that will benefit the user?

Revise and pitch it to your partner of this activity

# WHAT do designers design?



*Control*



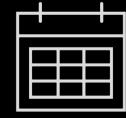
Onboarding



Interaction

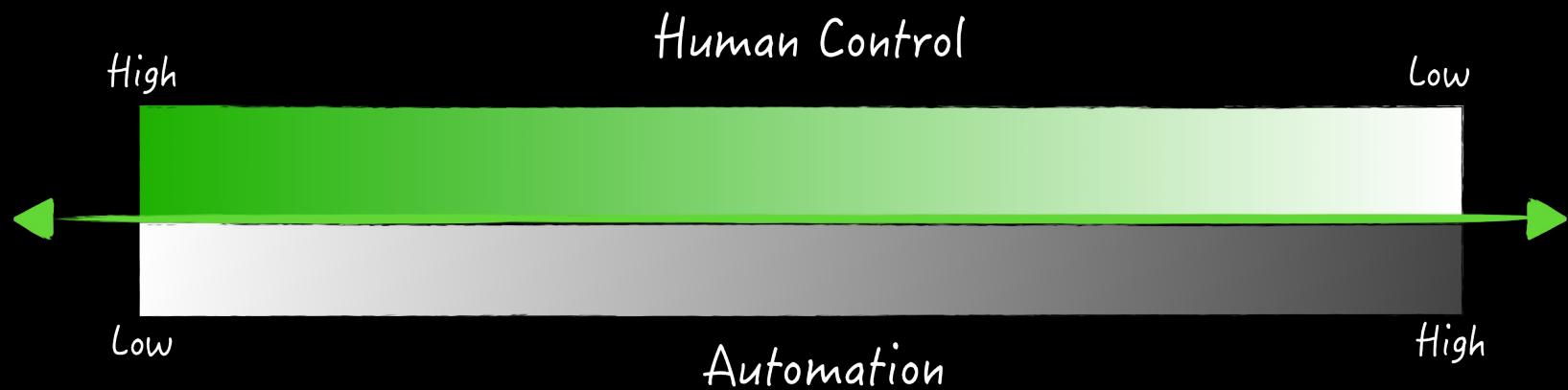


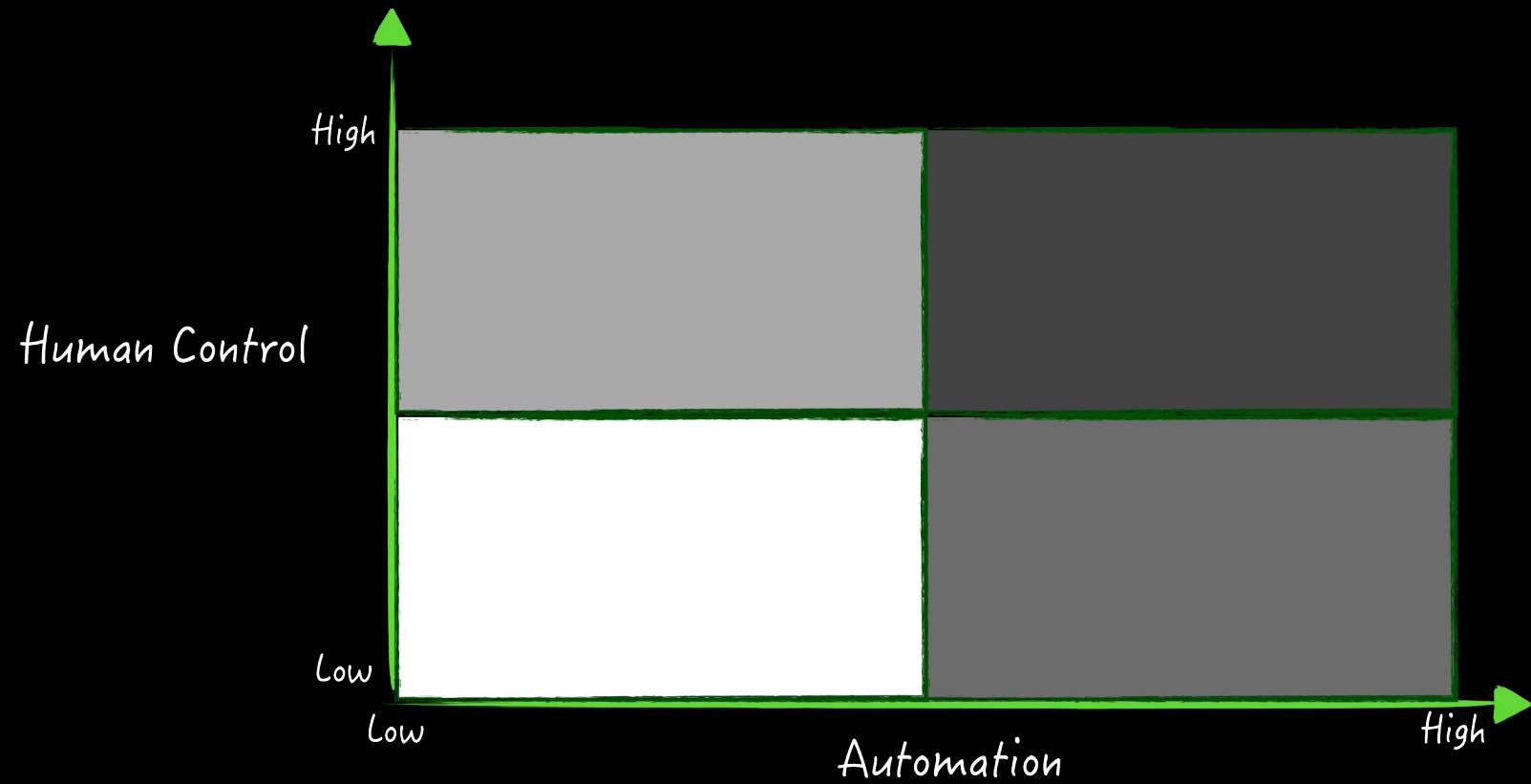
Failure



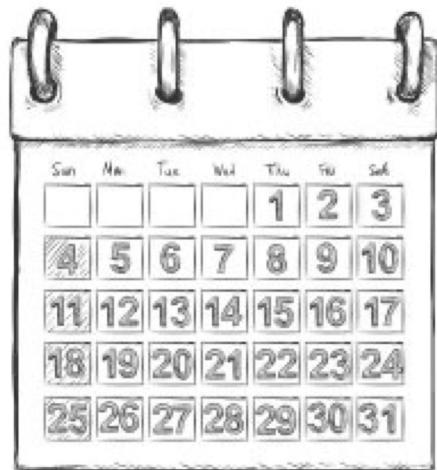
Evolution

# Relationship between Human Control and Automation





Shneiderman, B., 2020. Human-Centered Artificial Intelligence: Three Fresh Ideas.  
AIS Transactions on Human-Computer Interaction, 12(3), pp.109-124.



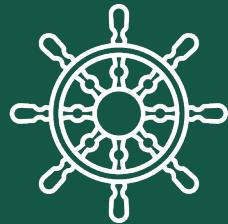
## Map a user's need for control

The level of user control needed for this feature  
is low / medium / high / unsure

because \_\_\_\_\_

\_\_\_\_\_

# WHAT do designers design?



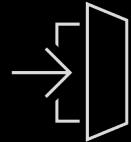
*Control*

*Make clear how well the system can do what it can do*

*Allow for opting out or dismissal*

*Allow for manual adjustment or correction*

*Inform the users about changes*



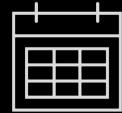
*Onboarding*



*Interaction*

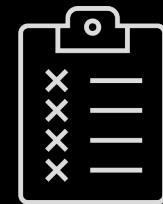


*Failure*



*Evolution*

# WHAT do designers design?

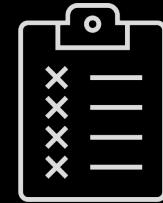


Failure

- Input error



# WHAT do designers design?

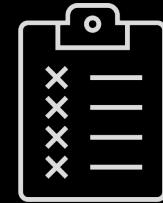


Failure

- Input error
- System limitation
- Context errors



# WHAT do designers design?



Failure

- Provide informative and actionable error message
- Create opportunities for feedback
- Return control to the user

# Case Study -- Heuristic Evaluation

- Photo Organizer (Google Photos  and iOS Photos  . )
  - Focus on the object recognition related interface



# Case Study -- Heuristic Evaluation

- Act as a usability evaluator and inspect the interface with [HAI guidelines](#) (4-5 guidelines each group)
  - First evaluate individually on one mobile app
  - Then integrate the evaluation for the same app
  - Finally compare the result of two apps.
  - (After lecture) Submit your evaluation on MyCourses

Next on Wednesday

M2 Presentation