Interacting with AI

Human Computer Interaction

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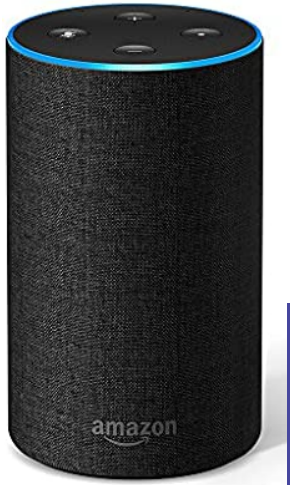
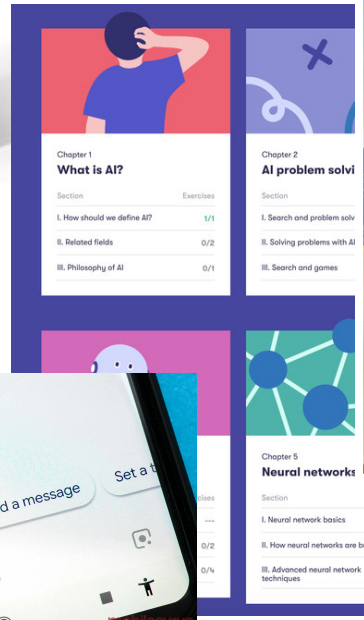
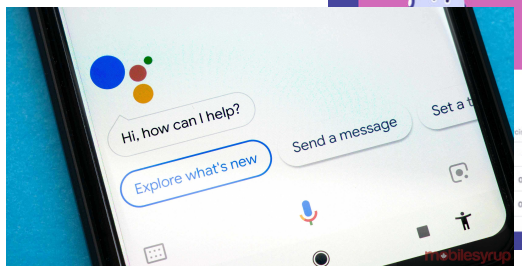
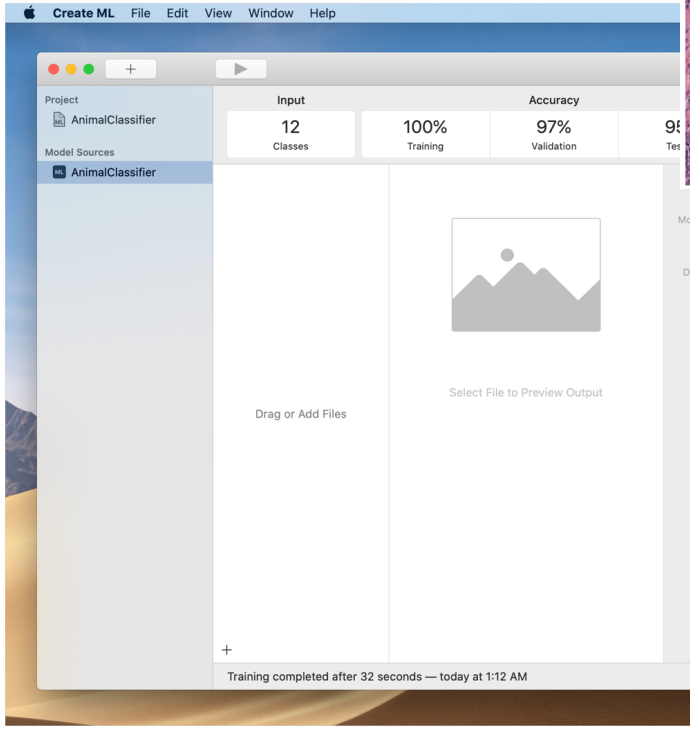
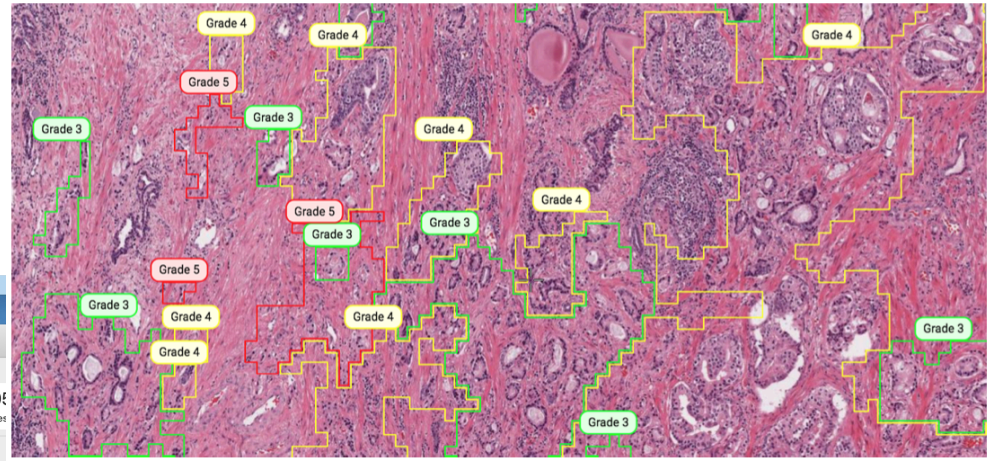
AI is everywhere!











What is Different in Interactive AI Systems?

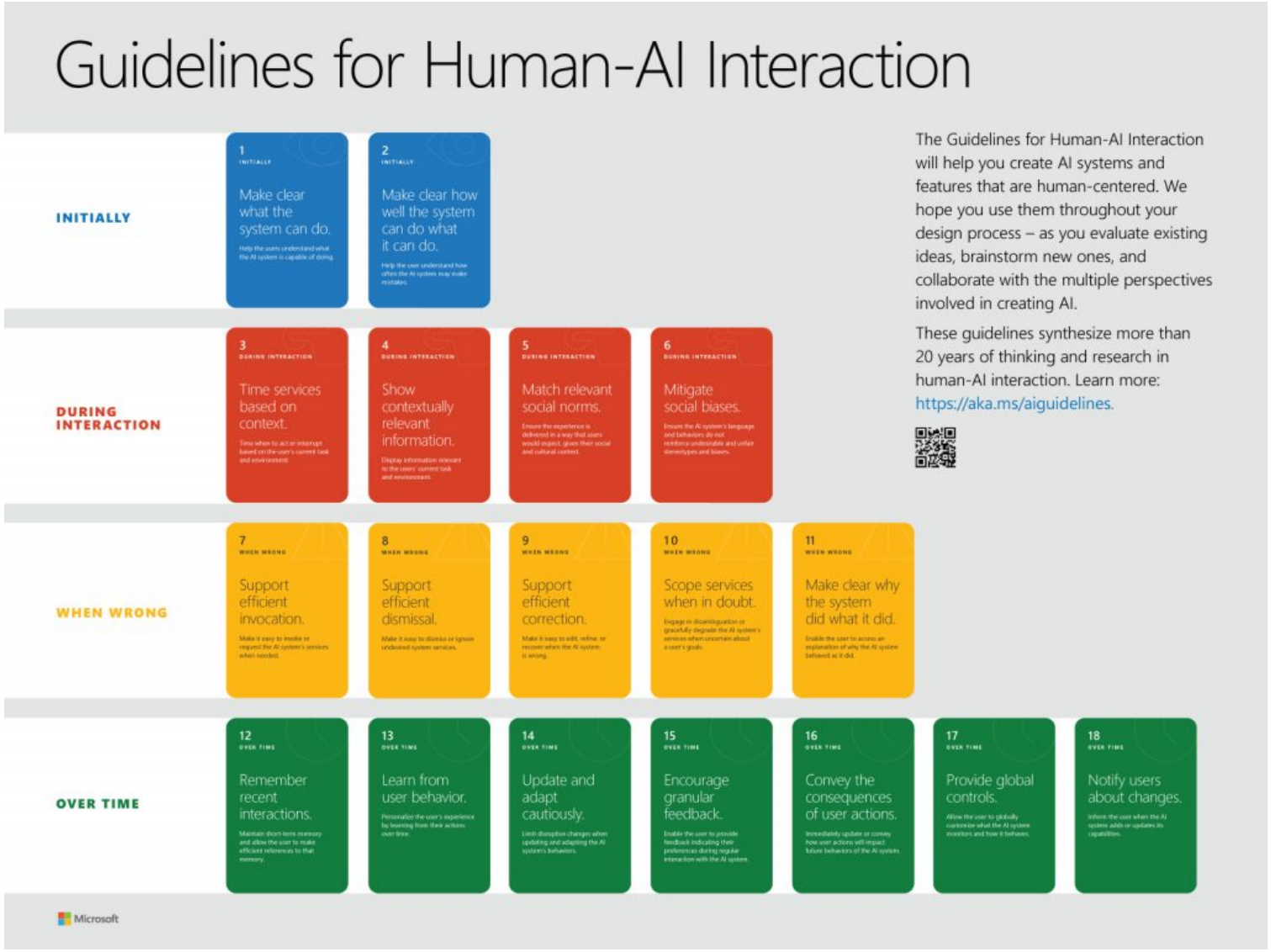
- AI-based systems are typically performed under **uncertainty**
  - often producing false positives and false negatives
- They may demonstrate unpredictable behaviors that can be *disruptive*, *confusing*, *offensive*, and even *dangerous* for users

What is Different in Interactive AI Systems?

- AI-based systems can also violate established usability guidelines of traditional user interface design
  - for instance: consistency or error prevention
- Many AI components are inherently **inconsistent**
  - they may respond differently to the same text input over time (e.g., autocompletion systems suggesting different words after language model updates)
  - or behave differently from one user to the next (e.g., search engines returning different results due to personalization)

How Can Design Interactive AI Systems?

- By following a human-centered process
  - in contrast to a data- or feature-oriented process
- Deciding when "to AI" and when "not to AI"
- Understanding when to automate (i.e., replace the user) and when to augment users' capabilities
- Balancing the uncertainty of AI systems with proper expectations and feedback



By Microsoft Research: https://www.microsoft.com/en-us/research/project/guidelines-for-human-ai-interaction/

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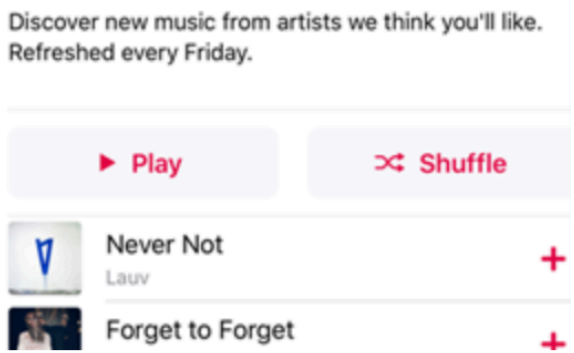
INITIALLY

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

Help the user understand how often the AI system may make mistakes.

EXAMPLE IN PRACTICE



The recommender in **Apple Music** uses language such as "we think you'll like" to communicate uncertainty.

Make clear how well the system can do what it can do. 2

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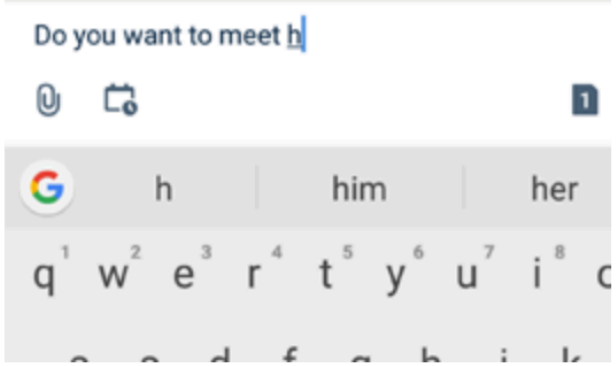
DURING INTERACTION

Mitigate social biases.

Ensure the AI system's language and behaviors do not reinforce undesirable and unfair stereotypes and biases.

EXAMPLE IN PRACTICE



The predictive keyboard for **Android** suggests both genders when typing a pronoun starting with the letter "h."

Mitigate social biases. 6

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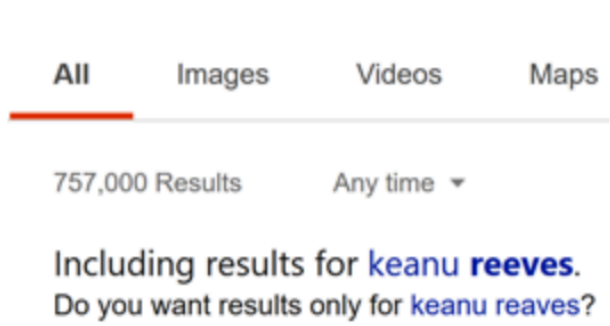
WHEN WRONG

Support efficient correction.

Make it easy to edit, refine, or recover when the AI system is wrong.

EXAMPLE IN PRACTICE



When **Bing** automatically corrects spelling errors in search queries, it provides the option to revert to the query as originally typed with one click.

Support efficient correction. **9**

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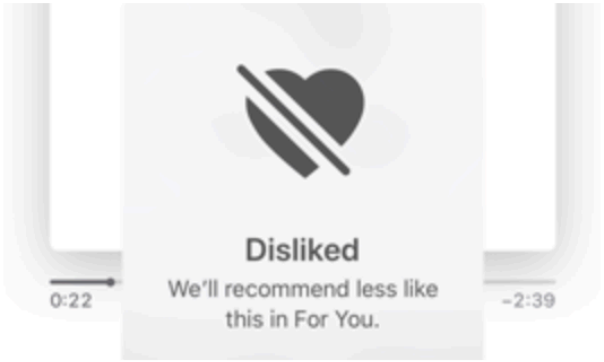
OVER TIME

Convey the consequences of user actions.

Immediately update or convey how user actions will impact future behaviors of the AI system.

EXAMPLE IN PRACTICE



Upon tapping the like/dislike button for each recommendation in **Apple Music**, a pop-up informs the user that they'll receive more/fewer similar recommendations.

Convey the consequences of user actions. 16

Amazon Echo

Hands-On and Exercise

Applying the Human-AI Guidelines…

- https://docs.google.com/spreadsheets/d/1DAz8fR5DWTpxZ-5r6y7QE5qrqBdC9-fkYdHYsRpKGUk/

STAGE		GUIDELINE	DESCRIPTION
INITIALLY	1	**Make clear what the system can do.**	Help the user understand what the AI system is capable of doing.
	2	**Make clear how well the system can do what it can do.**	Help the user understand how often the AI system may make mistakes.
DURING INTERACTION	3	**Time services based on context.**	Time when to act or interrupt based on the user's current task and environment.
	4	**Show contextually relevant information.**	Display information relevant to the user's current task and environment.
	5	**Match relevant**	Ensure the experience is delivered in a way that users

Other Guidelines and References

- Google's People+AI Guidebook: https://pair.withgoogle.com/guidebook/
- Apple's Human Interface Guidelines for Machine Learning: https://developer.apple.com/design/human-interface-guidelines/machine-learning/
- Human-AI Guidelines - Interactive cards with examples in practice: https://aidemos.microsoft.com/guidelines-for-human-ai-interaction/demo

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