



alice: Empowering Professionals with Empathic AI

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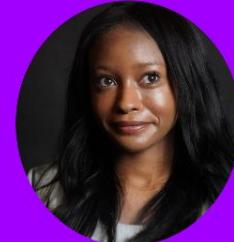
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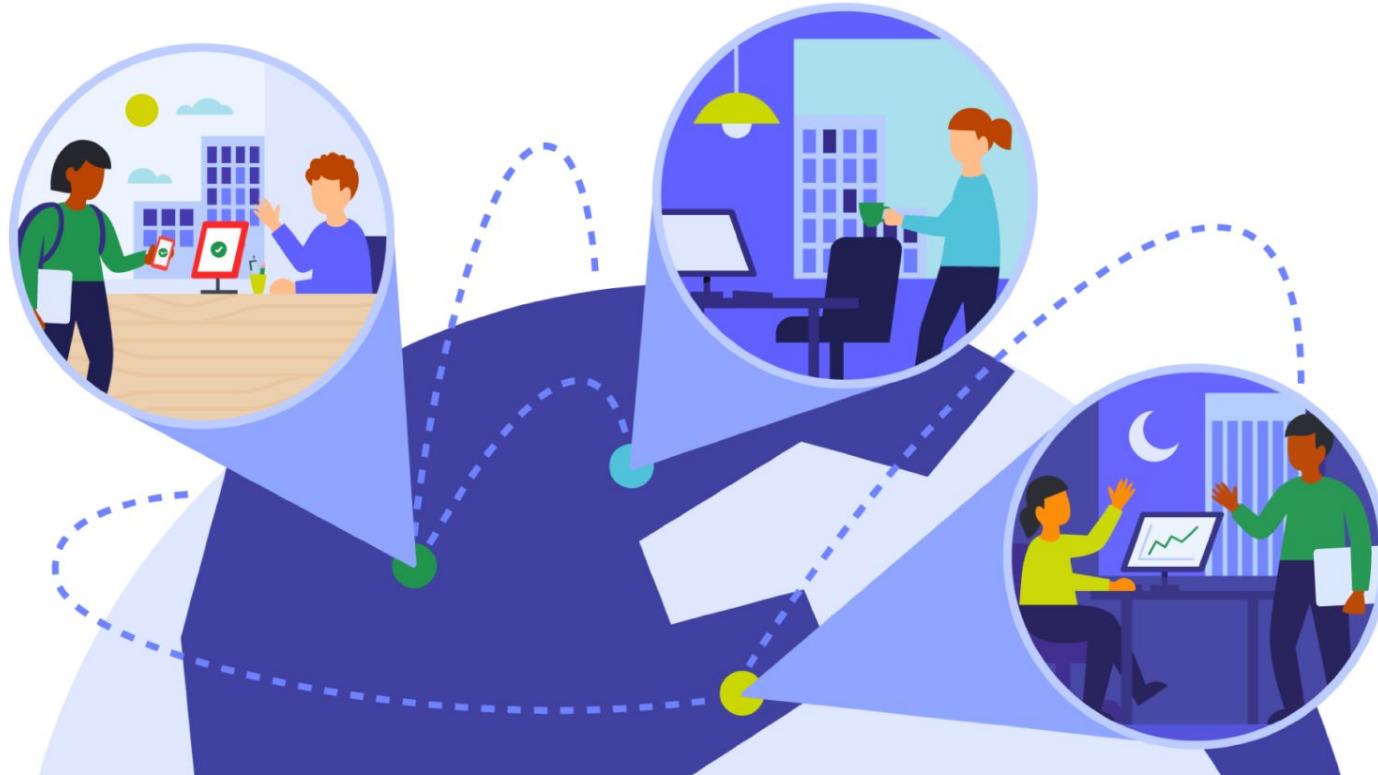


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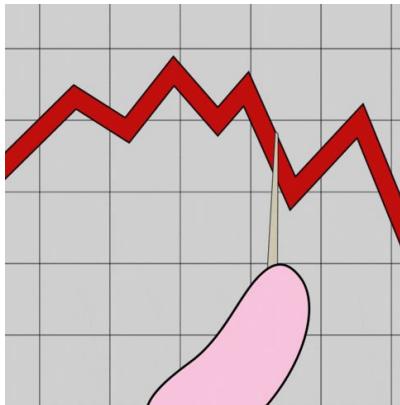


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The workforce over the years



Workplace paradigms have shifted drastically



Despite investments in training, many companies struggle to upskill employees effectively.



"80% of employers offer upskilling benefits, but only 51% of employees utilize them."

-SHRM | Workplace News & Trends 2023

The employee upskilling dilemma



ABOUT

Emma is a working as a senior Account Executive at a remote Fortune 500 company. **She's been in her position for about 2 years** and would like a promotion. Emma currently does not partake in upskilling courses.

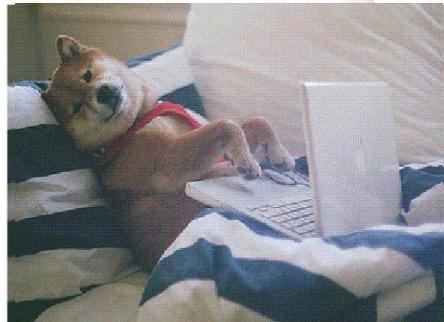
PAINPOINTS

- Does not fully understand how to effectively use the company's latest AI-powered CRM tool
- Finds current training sources boring or confusing
- Experiences cognitive fatigue after long workdays
- Finds it challenging to learn technical topics remotely and **prefers in-person guidance**

GOALS

- **Earn a promotion and become trained in the latest AI-powered CRM tools**
- Invest her income, so having higher earning capability is very important
- Learn more technical skills so that she can better communicate with engineering teams

Existing platforms limit communication to a chatbox interface



Fill in the rest of the ANOVA table.

$SS_{between} = 5.32$	$df_{between} = 4$	$MS_{between} =$	$F =$
$SS_{within} = 4.83$	$df_{within} = 12$	$MS_{within} =$	

In this example, there are groups and total subjects in the study.

[View Answer](#) [Submit Answer](#)

Udacity AI

Hi Cindy! I'm Udacity AI - I'm here to help you throughout your learning journey.

I can assist with content-related questions, offer additional practice, provide account support, help troubleshoot workspaces and more.

Is there anything I can help you with now?

Udacity GPT
Powered by OpenAI

when it comes to model training, how does supervised machine learning differ from unsupervised machine learning?

Great question, Amandeep! In supervised machine learning, we have labeled data, which means that we have both input data and corresponding output data. The goal of supervised learning is to learn a mapping between the input data and the output data. This is done by training a model on a labeled dataset, where the model learns to map similar input data to similar output data.

On the other hand, in unsupervised machine learning, we have unlabeled data, which means that we only have input data and no corresponding output data. The goal of unsupervised learning is to find patterns or structure in the input data. This is done by training a model on an unlabeled dataset, where the model learns to group similar data points.

Type message

[Send](#) [Clear](#)

Emma craves guidance – the kind of personalized, immediate support you'd get from an **attentive mentor.**

A real-life human guiding your online learning journey anytime, anywhere is not quite feasible.....



A real-life human guiding your online learning journey anytime, anywhere is not quite feasible.....

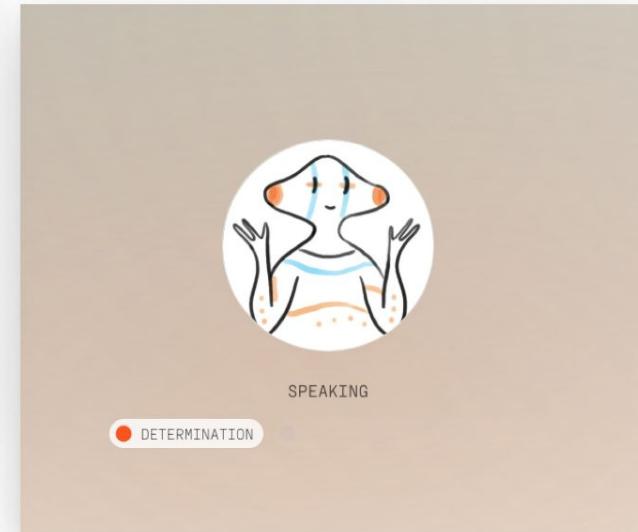
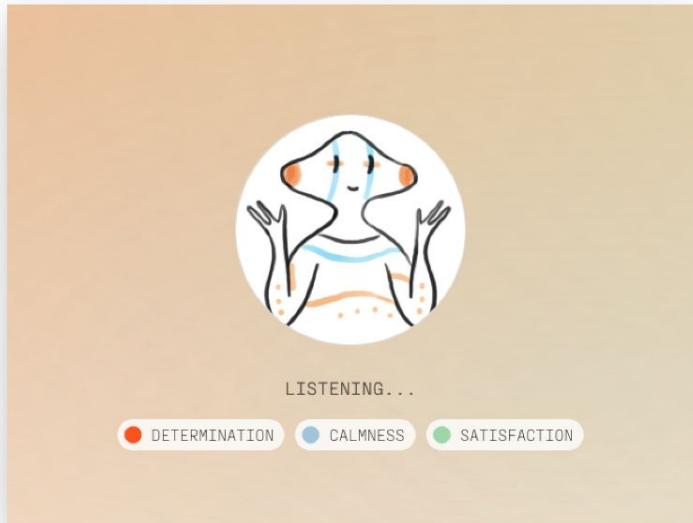


Imagine a bio-sensing conversational agent that can do just that.

The image displays two screenshots of AI-powered tools for emotional state detection. The top screenshot is titled 'Empathic Voice Interface' and features a circular interface with various labels such as 'Finn', 'Whimsy', 'Sasha', 'Sam', 'Rampiness', 'TTS Injection', 'NPC', 'Custom LLM', 'Accent', 'Aura', 'Darker', 'Pitch', 'Kara', and 'Fur'. It includes buttons for 'Start building →' and 'Documentation'. The bottom screenshot is titled 'Expressions Measurement' and shows a video feed of a smiling man with glasses. To the right of the video feed are three panels: 'Facial expression', 'Voice Burst', and 'Speech Prosody', each displaying numerical values and corresponding emotion names. It also includes buttons for 'Start with webcam →' and 'Documentation'.

A bio-sensing agent can detect Emma's emotional state using tools like Hume's Empathetic Voice Interface (EVI) and facial recognition technology.

Such a tool can interpret voice tone, rhythm, and emphasis



Facial recognition analyzes subtle facial cues

Streaming API status: Connected



Facial expression Vocal burst Speech prosody

Differentiate 37 kinds of facial movement that are recognized as conveying distinct meanings, and the many ways they are blended together

Top expressions

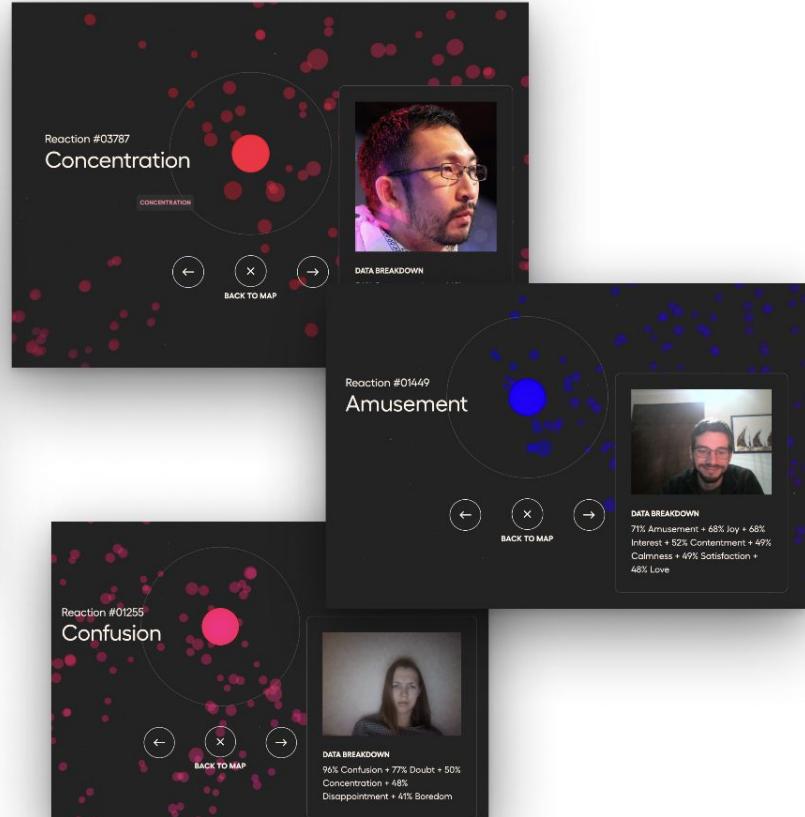
Expression	Score
Joy	0.71
Amusement	0.71
Interest	0.61

Embedding plot

Expression levels

Expression
Calmness
Joy
Amusement
Anger
Confusion
Disgust
Sadness
Horror
Surprise

FaceTime HD Camera (3A7tF4... Default - MacBook Pro Microph...



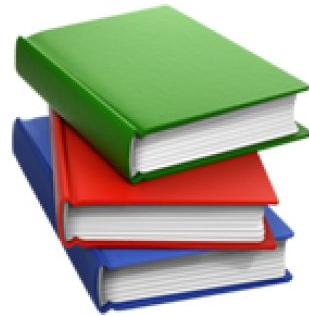
By integrating these technologies, conversational agents can go **beyond simple chatbox interfaces** to engage with professionals on a deeper level.

Our goal is to **improve the online learning experience** by designing a conversational agent with bio-sensing capabilities **to address cognitive overload.**

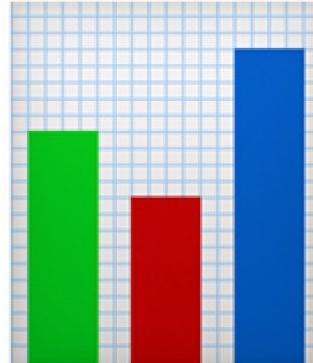
Research

We began in the spring

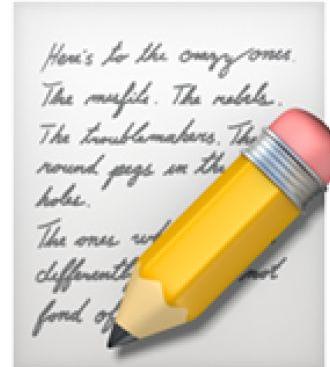
Literature Review



Comparative Analysis



Online Surveys



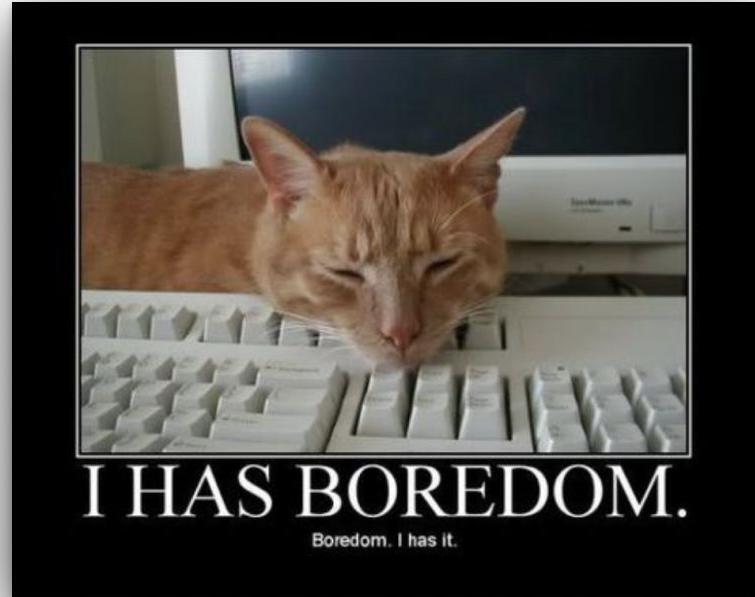
n = 64

User Interviews



n = 12

Professional
development is **boring.**



**Motivation is critical to
learning as learning is
an active process**

(Steel & König, 2006).

**Collaboration
encourages motivation.**

**Remote learning hinders
collaboration.**



Bio-sensing AI can make
learning  fun

But how?

Wizard of Oz (WOZ) study.



Wizard of Oz (WOZ) study.



The Evolution of Cybersecurity

In this article, you'll explore the evolution of hacking and cybersecurity.

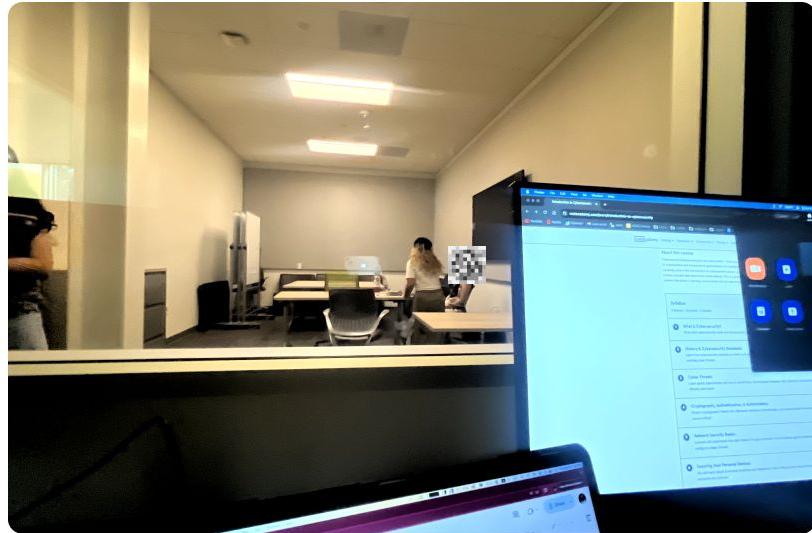
When [ENIAC](#), the first modern computer, was brought online in 1945, **cybersecurity** wasn't a word you could find in the dictionary. The only way to interact with the building-sized computers of the era was to be physically present, so virtual threats weren't a risk, and access control was a matter of physical security.

Cybersecurity developed as a distinct field throughout the 1960s and 70s and exploded into the public consciousness in the late 1980s, after a series of events that highlighted just how dangerous a lack of security could be. Continuing to grow throughout the 90s, cybersecurity is now a core part of modern life. Let's explore the brief history of this field!

Origins

Back Next

How do people react
to a conventional
chatbot vs a bio-
sensing agent?



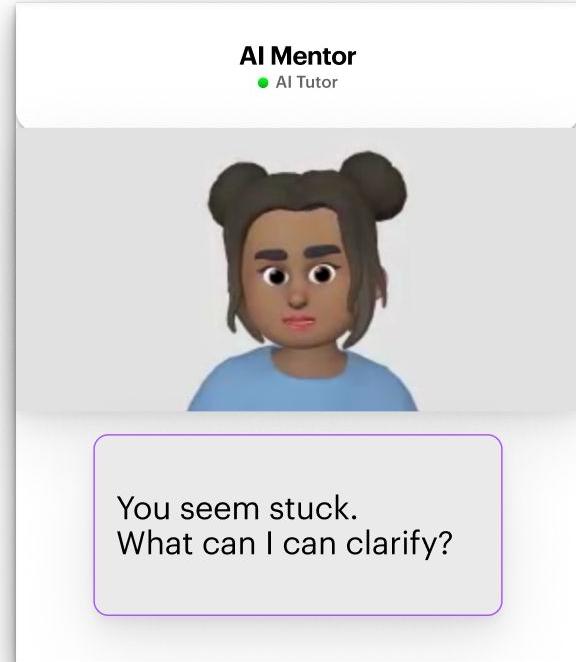
Passive AI: Only speaks when spoken to.

The image displays two screenshots from a messaging application, likely WhatsApp, demonstrating the concept of "Passive AI".

Screenshot 1: A user with a blue profile picture sends a message to "Everyone" at 4:21 PM: "Can I share my SSN with my neighbour?". An AI Mentor, represented by a red robot icon, responds at 4:22 PM: "No, you should never share your SSN with anyone who doesn't have a legitimate need for it, as it could lead to identity theft."

Screenshot 2: A user with a blue profile picture sends a message to "Everyone" at 7:16 PM: "What is the Malware Infection Growth Rate in 2024?". The AI Mentor, represented by a red robot icon, responds at 7:17 PM: "In 2024, the malware infection growth rate surged by approximately 30% in the first half of the year, with a noticeable increase in attacks during March through May, which saw a 92%".

Active AI(**bio-sensing**):
Intervenes stress is
detected.



Bio-sensing Conversational Agents...

Bio-sensing Conversational Agents...

Liberate 

Bio-sensing Conversational Agents...

Liberate 
Foster Engagement 

Bio-sensing Conversational Agents...

Liberate 

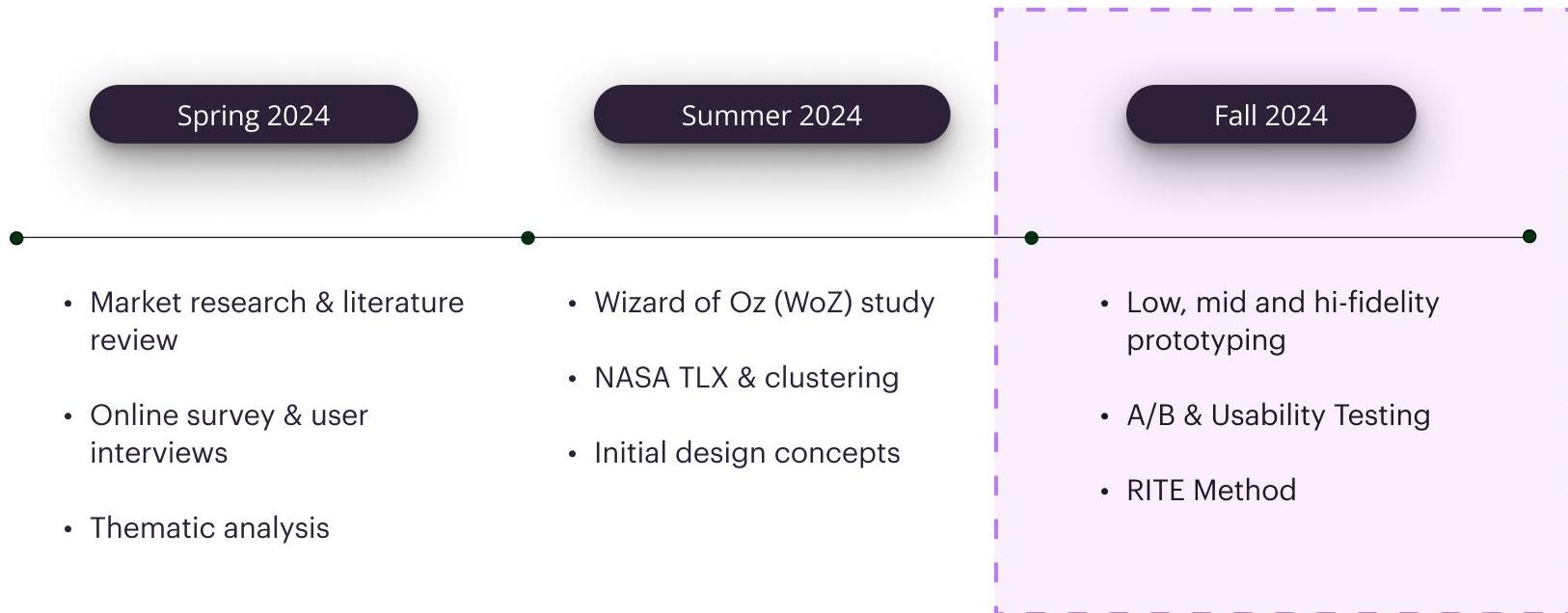
Foster Engagement 

Empower Knowledge Retention 

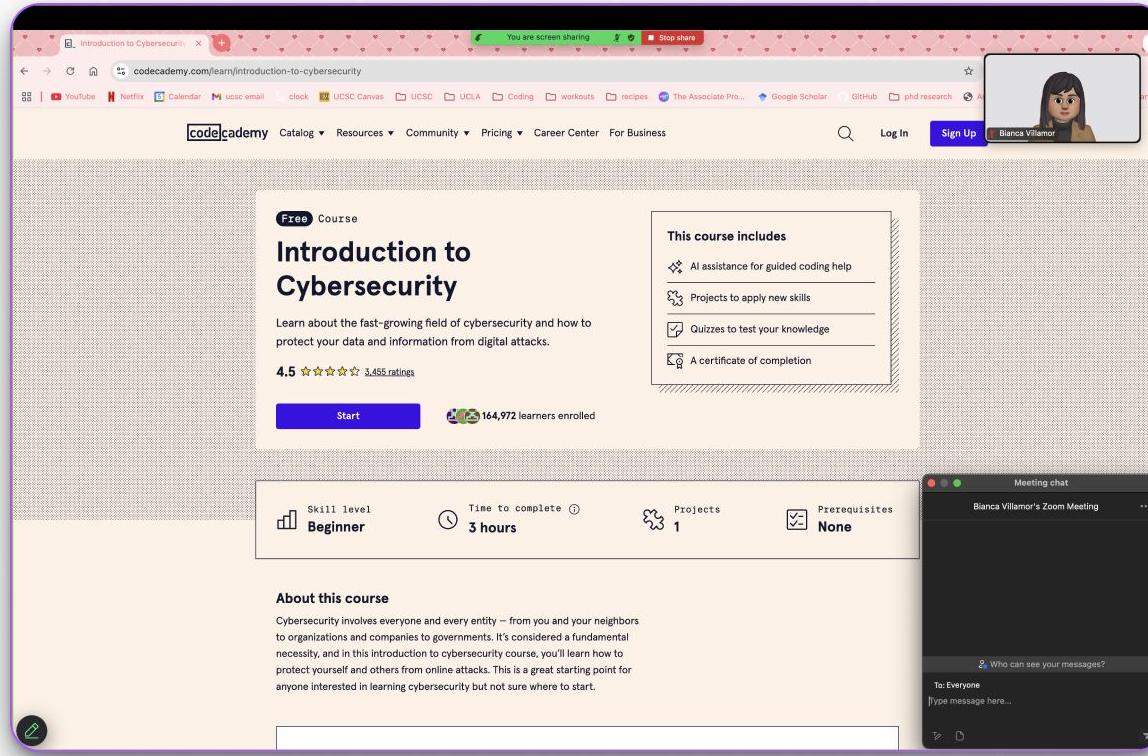
**Our research
validates the *need*
for bio-sensing AI.**

Design

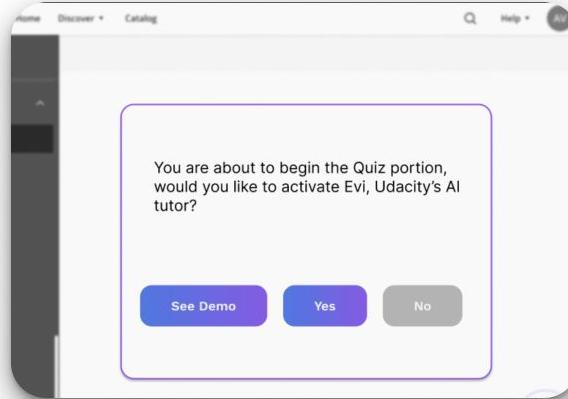
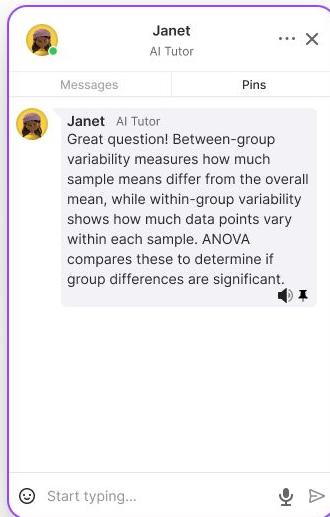
Research to Design Roadmap



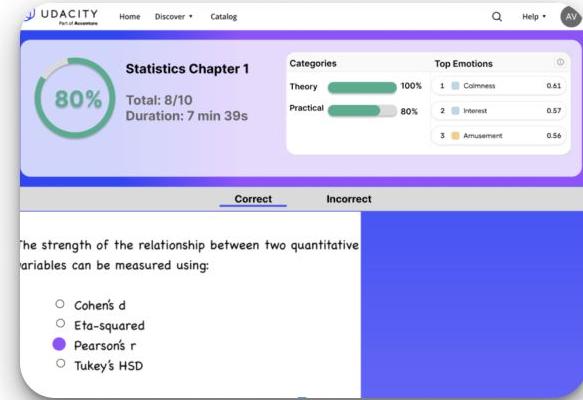
Our Wizard of Oz Study served as the blueprint for our designs



Initial Designs



Pin Feature

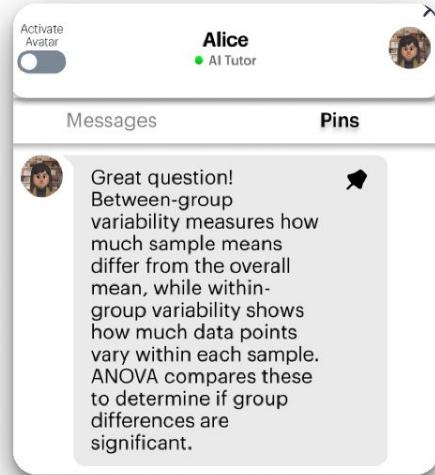


Activated Agent

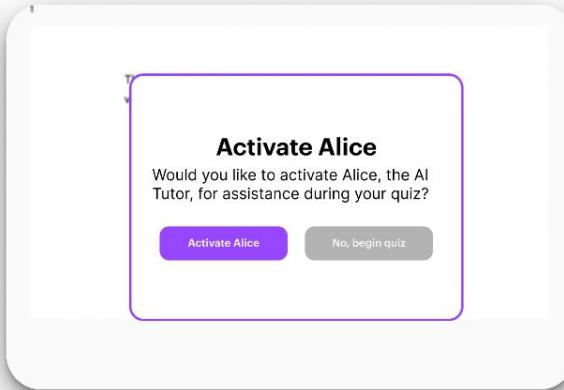
Bio-sensing for course assesment



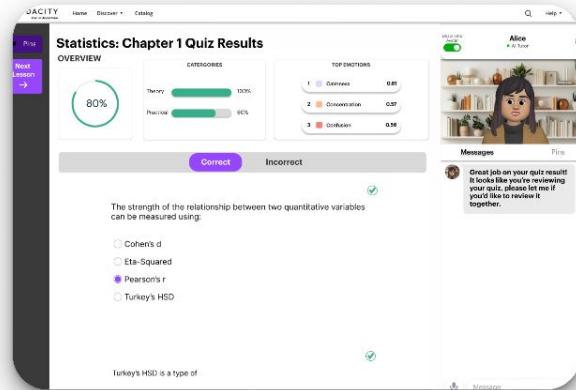
Final Designs



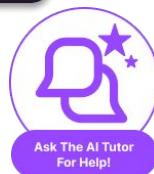
Pin Feature



Activated Agent



Bio-sensing for course assesment



Main Features

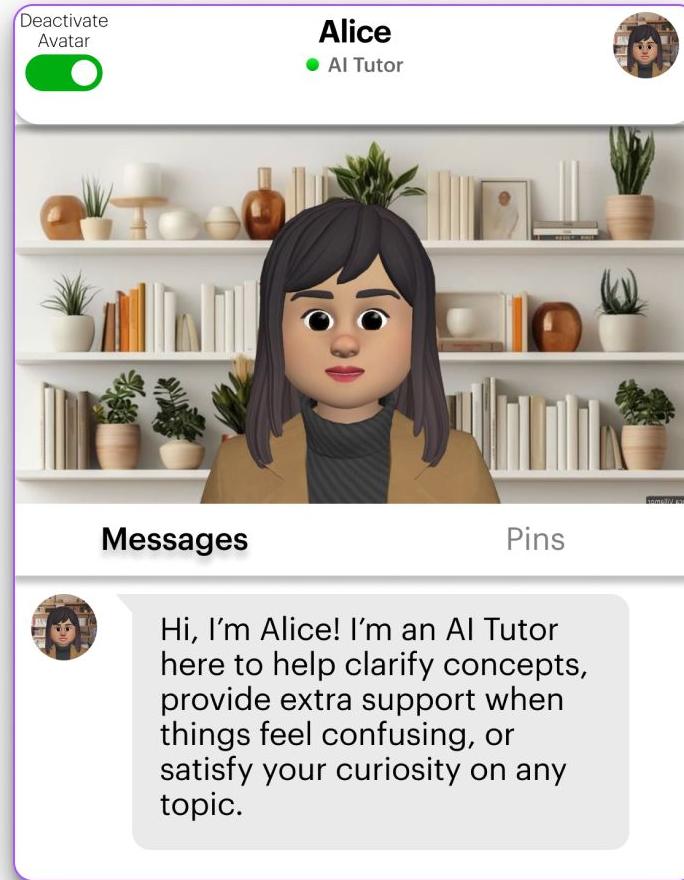
AI Guided Learning

**AI
Communication
Tools**

Instant Feedback

**Knowledge
Retention**

Introducing alice[>]





For Emma, our developed persona,
Alice represents a breakthrough in
learning technology.

Empathic Voice Interface

Start building with EVI 2, our latest foundational voice-to-voice model with EQ

[Start building →](#) [Documentation](#)

The diagram is a circular interface with various components labeled around its perimeter:

- Finn
- Whimsy
- Extroversion
- Responsiveness
- Stella
- Sunny
- Far
- Faz
- Ales
- App UI
- Custom LLM
- Pitch
- Kora
- Dacher
- Aura

Internal labels include "TTS Injection" and "NPC".

Expressions Measurement

Use psychologically valid models of facial movement and vocal modulation

[Start with webcam →](#) [Documentation](#)

The software interface includes the following data:

Facial expression	Vocal Blend	Speech Intensity
Amusement	0.93	Surprise
Surprise	0.97	Curiosity
Curiosity	0.94	Happiness

Below the interface, it says "Recording AVX Status: Connected" and "Toshiba iQ Camera (2025B...)".

Alice uses advanced bio-sensing technology to automatically and passively gather insights about the user's cognitive and emotional state.

Design Evaluation Methods & Tools

Online Surveys

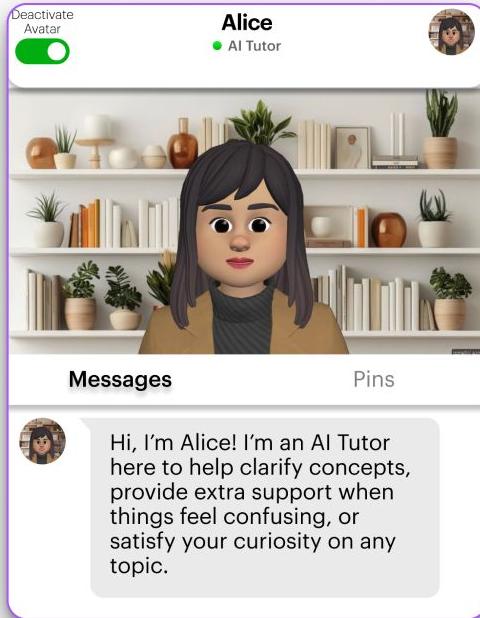
Usability Testing

A/B Testing

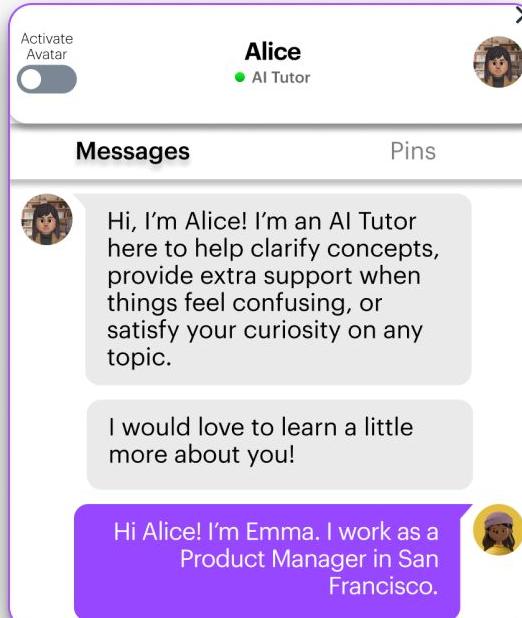
RITE



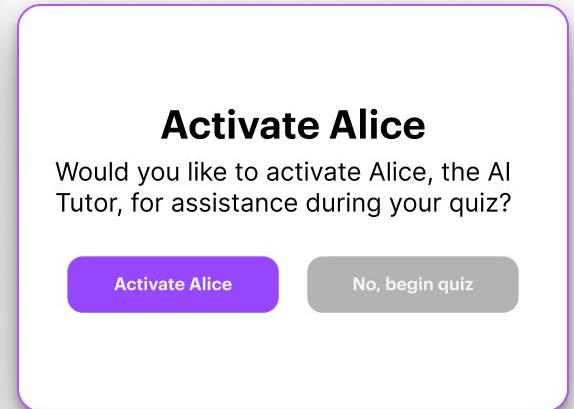
Customization



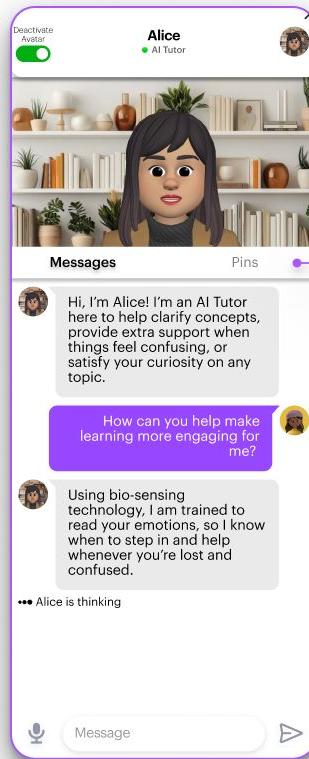
Activated Agent



Deactivated Agent



Knowledge Retention



Pin Feature

The diagram illustrates the 'Pin Feature'. It shows two versions of the application interface side-by-side. On the left, the 'Activate Avatar' toggle switch is off. On the right, the toggle is on, and the application interface has been pinned, indicated by a purple border around the main content area. The pinned content includes the user profile 'Alice' and 'AI Tutor', a 'Messages' section, and a 'Pins' section containing a detailed explanation of between-group variability in ANOVA.

UDACITY Part of Accenture Home Discover Catalog

Saved Pins

Intro to Statistical research

❖ The difference between-group variability and within-group variability in ANOVA

In the context of Analysis of Variance (ANOVA), the terms "between-group variability" and "within-group variability" are crucial for understanding how the ANOVA test works. Here's a breakdown of each concept:

Definition: Between-group variability (also known as "between-treatment variability" or "explained variability") measures how much the group means differ from the overall mean of all groups combined.

Source: This variability arises from differences between the means of different groups. If the means of the groups are very different from each other, the between-group variability will be high.

Calculation: It is calculated by comparing the mean of each group to the overall mean (grand mean) and considering the number of observations in each group.

Formula: $SS_{between} = \sum_{i=1}^k n_i(\bar{X}_i - \bar{X})^2$

- $SS_{between}$: Sum of squares between groups
- n_i : Number of observations in group i
- \bar{X}_i : Mean of group i
- \bar{X} : Grand mean (mean of all observations)

❖ What is the chi - square test?

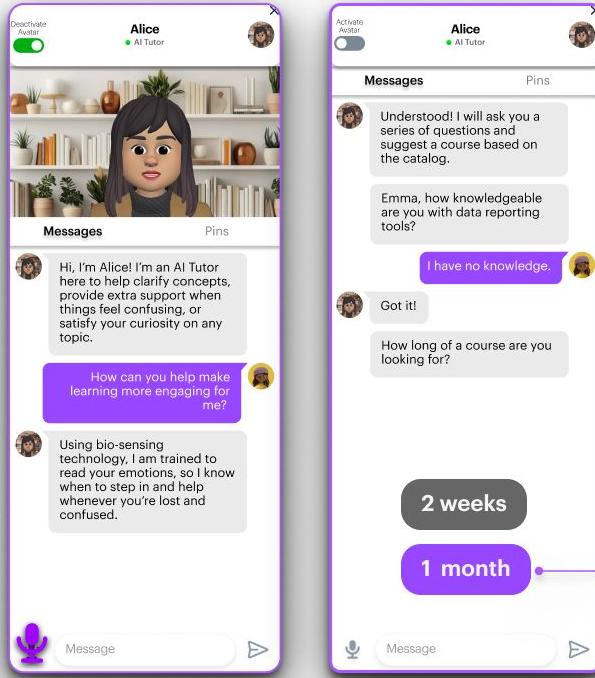
The chi-square test is a statistical test used to determine whether there is a significant association between categorical variables. It is widely used in hypothesis testing and can be applied in various contexts such as genetics, marketing, and social sciences.

There are two main types of chi-square tests: the chi-square goodness-of-fit test and the chi-square test of independence. Here's a detailed overview:

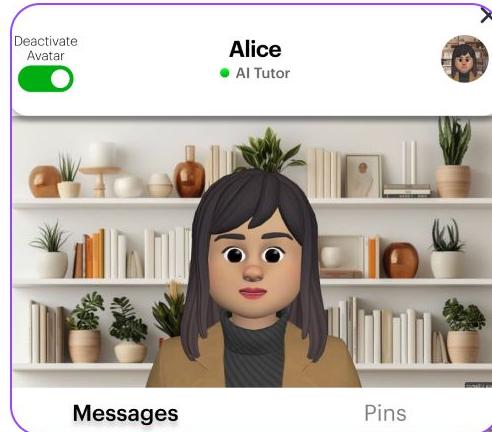
Chi-Square Test of Independence:

AI Pin Summary

Accessibility

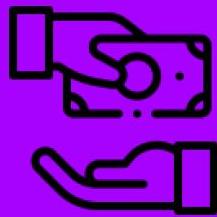


AI guided learning



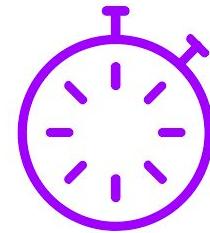
The ADHD Body Double: A Unique Tool For Getting Things Done

Limitations

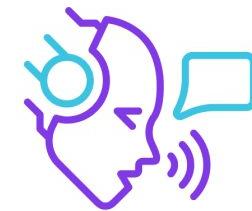


Recruitment Challenges

Blockers



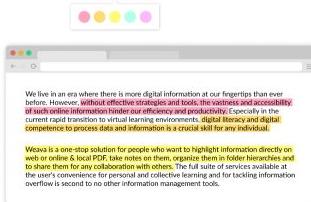
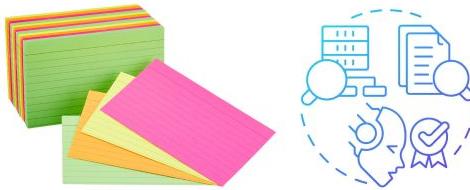
Time



AI Implementation

Future Work

Features



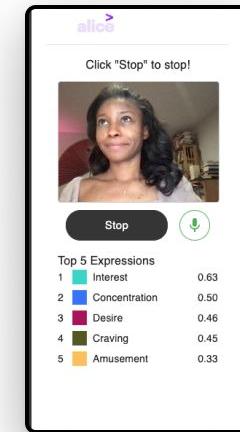
Research Article

paperjs/ paperjs.github.io

The static pages hosted at <http://paperjs.org> as the Paper.js website, generated from <https://github.com/paperjs/paperjs.org> by running it through <https://github.com/studiomoniker/woods> – Automatically...

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Chrome Extension



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UCSC SVC Program Team: Fisher Dietz & Ramon Rubio

Our Participants & HCI cohorts

Our family and pets 

Thank you!

Any Questions?

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