Féidearthachtaí as Cuimse
Infinite Possibilities

Research Connect MeetUp // September 2024

MY RESEARCH PROJECT
SEFAR:SEMIOTIC EVALUATION FRAMEWORK FOR AUGMENTED REALITY

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hello

NINA LYONS

PERSONAL BACKGROUND

A lifetime ago, I trained as a graphic designer in the Limerick School of Art and Design and worked as a designer in the industry for nearly 2 decades. During this time I worked for a range of national and international clients on a range of projects including websites, visual identities, editorial design, advertising, book design, book cover design, packaging, signage, magazines, motion graphics, board games, web apps and mobile apps.

In recent years I have moved into research and lecturing. I am currently part of the CDM team lecturing web development and design while also doing my PhD part time.

EDUCATIONAL HISTORY

2020 PG Cert in University Teaching & Learning
TU Dublin

2015 Special Award in Human Computer Interaction (HCI)
IADT

2015 HDip in Science in Computing
TU Dublin (formerly ITB)

2004 MA in Design Professional Practice
TU Dublin (formerly DIT)

2003 B(Des) in Graphic Design
Limerick School of Art and Design

Continued Professional Development

2021 Experiments in AI-Generated Media
Massachusetts Institute of Technology (MIT)

2021 Design for Impact & Behavioural Change
Copenhagen Institute of Interaction Design (CIID)

CURRENT RESEARCH

SEFAR FRAMEWORK

Semiotic Evaluation Framework for AR will be an interaction design framework that utilises visual communication theories to re-address the user's mental model so that it can be influenced by the virtual overlay of AR, rather than the physical device. By developing such a framework, we hope to answer questions such as:

Can we better explain and predict how user's perceive and interact with AR systems?

Can this lead to improved AR system designs? Such as better notification and interactions systems to overall enhance user experience?

Can this lead to improved user experiences, such as, better communications on intended narratives via AR enhance systems?

PUBLICATIONS INCLUDE

2022 N. Lyons & M. Smith (Book Chapter)
Removing The Screen: Measuring The Effectiveness of Aesthetically Relevant UI Design for New Technologies. Chapter in Handbook of Research on Designing User Interfaces With a Data Science Approach. (Eds: Abhijit Banubakode, Ganesh Bhutkar, Yohannes Kurniawan & Chhaya Gosavi). IGI Global, PA, US

2021 N. Lyons & M. Smith (Book Chapter)
From Overlay to Interplay: Subverting the Message and Creating the Surreal With Augmented Reality. Chapter in Handbook of Research on Contemporary Storytelling Methods Across New Media and Disciplines. (Eds: Lorena Clara Mihăeş, Raluca Andreescu & Anda Dimitriu). IGI Global, PA, US

N. Lyons & M. Smith (2019)
Augmented Reality - A Curatorial Tool. Presented at VARE 2019 - the 5th International Workshop on Virtual and AugmentedReality in Education 18-20 September, Lisbon, Portugal, 2019.

N. Lyons, M. Smith & H. McCabe (2018)
Sensory Seduction & Narrative Pull. The Promise of Augmented Reality. In proceedings of IEEE GEM 2018, Galway, Ireland. Available on the IEEE Xplore.

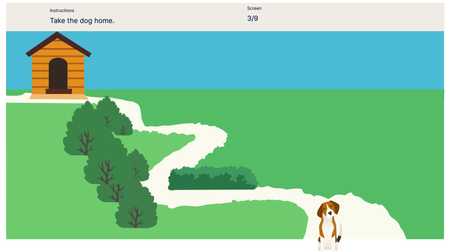
THEY FOLLOWED THE CHEESE

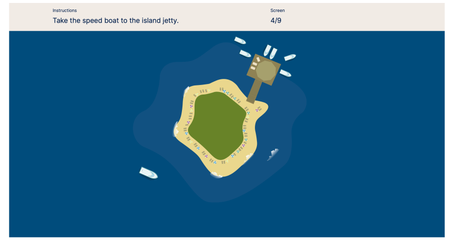
BENCHMARKING EXPERIMENT

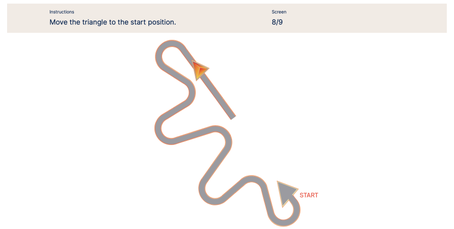
VISUAL WEB-BASED EXPERIMENTS SHOWCASING THE OPPORTUNITIES AVAILABLE FOR THE PRESENTATION OF INFORMATION IN AR

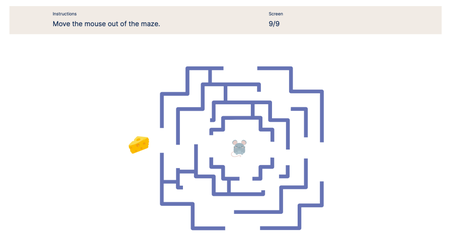
To establish an accurate account and find common baselines and benchmarks several different screens with a variety of images and interactions were utilised establish effective visuals across a number of categories. The aims of this experiment are:

1. Understanding a range of effective visuals that effect change in a user's behaviour with an interface
2. Understanding the visual thresholds that affect users' perception and effect change in their behaviour with an interface
3. Understanding the change in the user that caused or did not cause a change in behaviour





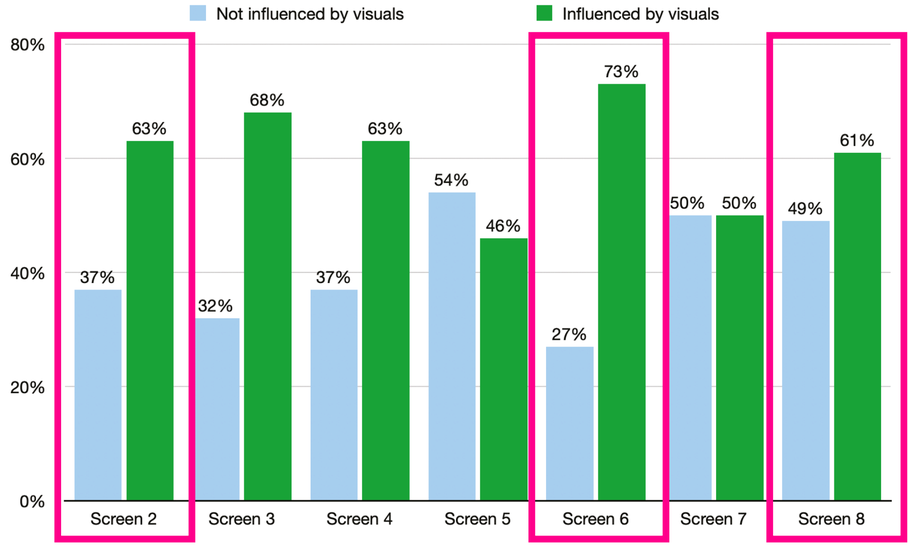


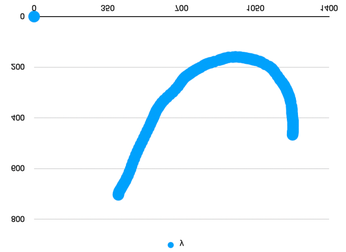


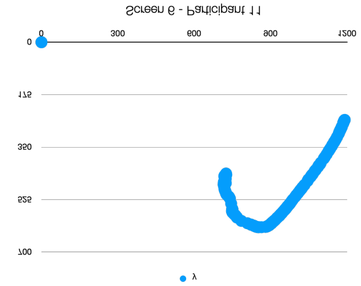
THEY FOLLOWED THE CHEESE

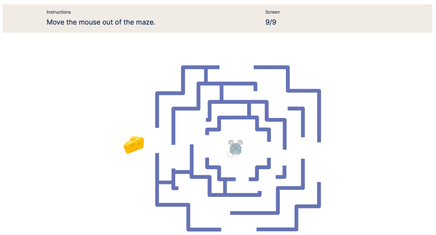
BENCHMARKING EXPERIMENT

The data collected from this initial benchmarking experiment gave good insights into the effectiveness of different visuals and how they influenced the participants' perception and essentially influenced or impacted their normal interaction behaviour.





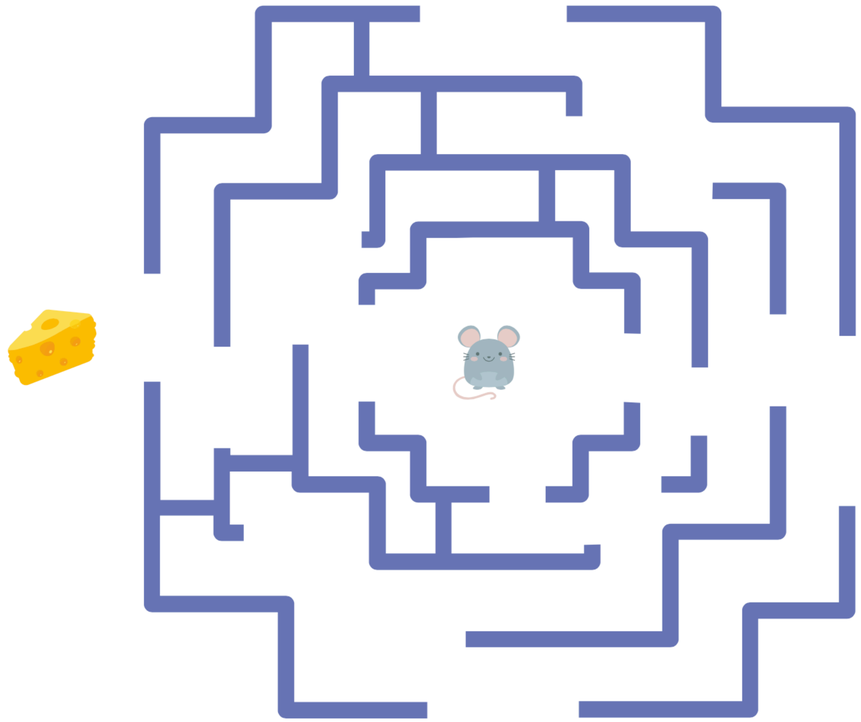




QUESTION:

WHICH EXIST WOULD YOU HAVE USED?

Instructions	Screen
Move the mouse out of the maze.	9/9



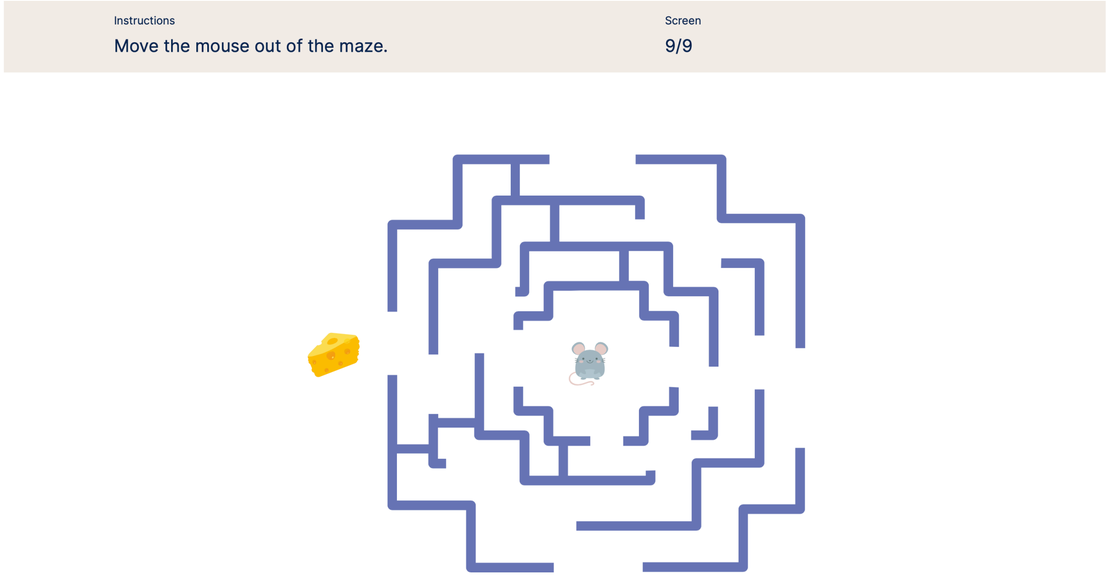
THEY FOLLOWED THE CHEESE

BENCHMARKING EXPERIMENT

There are two levels of understanding with visuals — denotation and connotation. In semiotics, denotation and connotation are terms describing the relationship between the signifier and its signified, and an analytic distinction is made between two types of signifieds: a *denotative* signified and a *connotative* signified. Meaning includes both denotation and connotation.

Each screen showed signifying levels of influence, with good results for affordance & Gestalt across all the screens. However, it was the result for connotation that stands out. While the other theories are visually based, connotation is working as a second level of signification taking the denotative sign (signifier and signified) as its signifier and attaching to it an additional signified (Chandler, 2007).

Connotations may have sociocultural and personal associations of the sign (Chandler, 2007) which generally relate to the interpretation, as connotation generally occurs in context. In terms of screen 8 there is a connotative relationship between the mouse and the cheese, mice like cheese, therefore the user believed that taking the mouse to the cheese was best choice for the mouse.



THE POWER OF CONNOTATION

The visual of the maze influenced 61% of users to move the mouse out of the maze, via the maze routes. However, Screen 8 was also utilising connotation. The maze had 4 valid exits.
A visual of a piece of cheese was at the far left exit. Despite no mention of the cheese in the instruction 95% of users moved the mouse to the exit with the cheese. Thus highlighting the power of connotation.

The experiment highlights how these theories can influence users, which opens up the opportunity for AR to move away from the annotative design that AR UIs have become. Using these theories to achieve semiotic extension could create more engaging AR experiences.

THANKS FOR LISTENING!