Applicability of Social Media Elements in Notification Systems in Large Interconnected Organisations
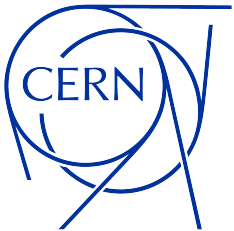
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Igor Jakovljevic

- Professional Experience:
    - **SmaXtec Animal Care GmbH** – Data Scientist and External Project Collaboration
    - **Interad** - The .Net Experts – C# Consultant
    - **DigiMeals** – Lead Frontend Engineer
    - **Authority Partners Inc.** - C# Developer
- Affiliations:
    - Graz University of Technology, CERN, Open Search Foundation (OSF)
- Research Topics:
    - Information Search and Retrieval, User Profiling, Internal and External Information, Large Organisations, Notification Recommendation, and Information Visualisations
- Research Focus:
    - User Navigation and Information Retrieval in Multidimensional Information Space for Notification Systems

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CoDiS Lab, Institute of Interactive Systems and Data Science

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CoDiS - Cognitive & Digital Science Lab

The main research areas of CoDiS include

- Digital literacy development
- Human and computational decision making
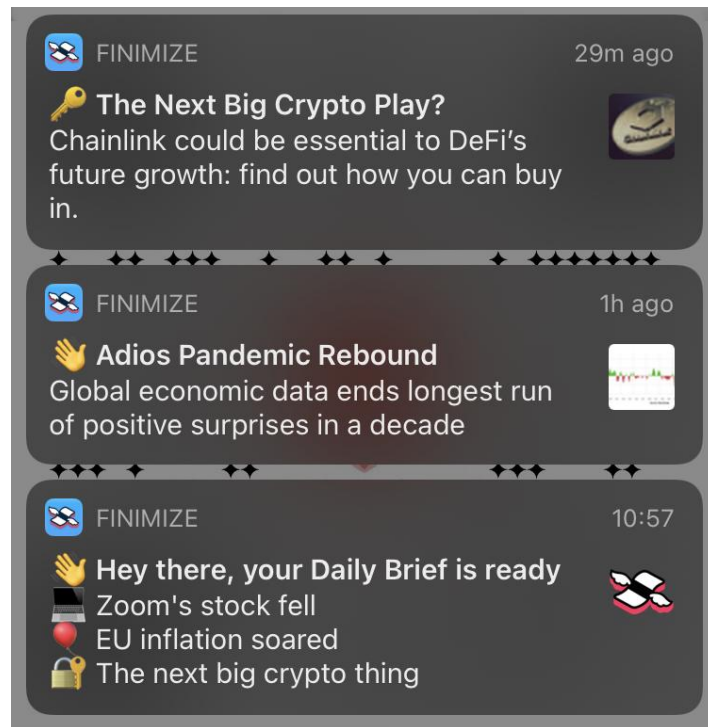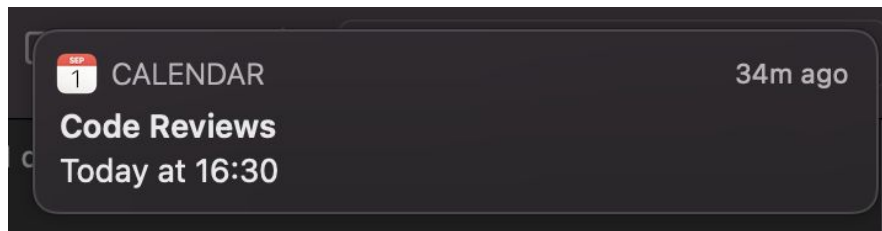- Human-centred system design and evaluation

Visit us at http://codislabgraz.org

Email us at: c.guetl@tugraz.at

Motivation

- CERN User Study
  - 1700 Entries
  - Need for better communication
- CERN New User Study
- CERN Notifications
  - Concept Project
  - Novel Approaches in Information Distribution

Motivation

Motivation

Anatomy of A Tweet- Must See Guide for Teachers
https://www.educatorstechnology.com/2013/06/anatomy-of-tweet-must-see-guide-for.html

Motivation

- CERN User Study
- CERN New User Study
- CERN Notifications
- Social Media Elements

Motivation

Anatomy of A Tweet- Must See Guide for Teachers
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Social Media Elements

Social Media Element	Description
Hashtags	A hashtag is a metadata tag type used on social networks to help users find resources with a specific theme or content
Microblogs	Microblog services allow users to post and share short textual messages that are then propagated to an audience, which can then quickly interact with the posts and between each other
Content approval/disapproval	Content approval/ disapproval & Social cues that send signals of social appropriateness or social acceptance of content to the content creator. Examples of these social elements are Likes, Retweets, Reactions, and more
User Groups	User groups represent the extent to which users can form communities and sub-communities. The more 'social' a network becomes, the bigger the group of friends, followers, and contacts.
User-to-User Relationship	User-to-user relationships express the extent to which users can relate to each other (e.g., friendships on Facebook or Followers on Twitter)
User Identity	It represents the degree to which users expose their identities on social media sites. It includes exposing information such as name, age, gender, profession, location, and other users' identifiable information

Research Questions

Research Question 1	Which elements of social media can be integrated into notification systems to display understandable and valuable notifications at a glance without explicitly disturbing the user?
Research Question 2	Would users prefer to receive notifications with integrated social media elements like hashtags, topic keywords, source information, rating by other users, and groups information?
Research Question 3	How do users react to notifications with this additional information?
Research Question 4	Which emotions do users experience when receiving notifications with and without this additional information?

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CoDiS Survey Tool

CoDiS Survey Tool

The single-story house was inspired by the shape of a **boulder**, and its dimensions and shapes would be difficult and expensive to construct using traditional methods. It´s the firs... commercially-rented property where the **load-bearing** walls have been made using a 3D printer **nozzle**.

The printer makes layers of concrete into walls following a design. The method is seen as a way to cut costs and environmental damage by reducing cement use.

The house consists of 24 printed concrete elements that were printed layer by layer at a factory in Eindhoven. The elements were then transported by truck to the construction site and placed on a foundation. The house was then equipped with a roof and window frames, with finishes applied afterward.

Source: archdaily.com

Pricing Info

Unlike traditional homes, which can take weeks or even months to frame out, the walls and foundation of a 3D-printed home can be ready in as little as two days, with only a three or four- person crew. All of these factors bring the production costs of a 3D-printed house down to as little as $4,000 per unit.

Hide Notification

Back | Please finish the tasks
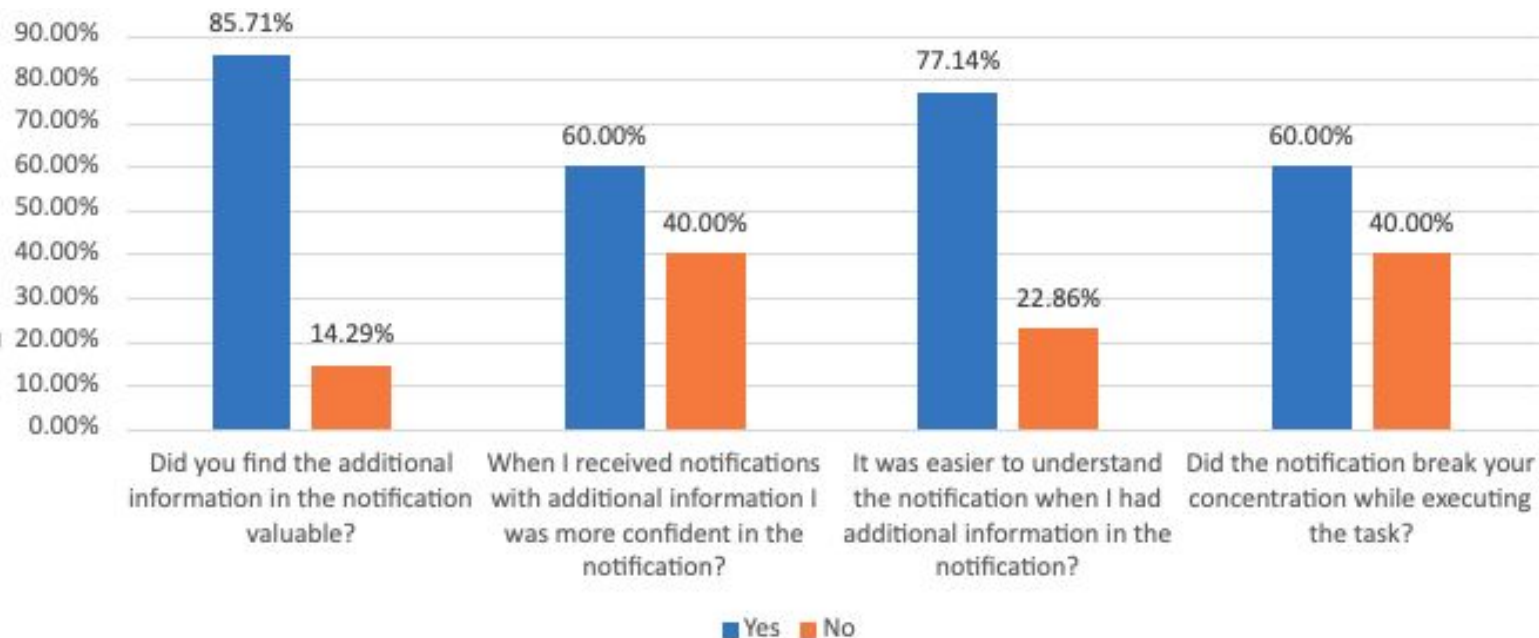
Evaluation

1. Article Interaction (Group A and Group B)
   a. 5 Articles (2 Fake News)
   b. Social Media Actions (Like/Share/Comment)
   c. Notifications
2. Feedback Questionnaire
3. System Usability Study
4. Computer Emotion Scale

Evaluation - Feedback Questionnaire

Question
Did you find the additional information in the notification valuable?
When I received notifications with additional information I was more confident in the notification?
It was easier to understand the notification when I had additional information in the notification?
Did the notification break your concentration while executing the task?
Do you have any other comments or questions regarding such an approach?
Do you have any other concerns with such an approach?
How would you improve the notifications?

Results - Feedback Questionnaire

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# Results - Feedback Questionnaire
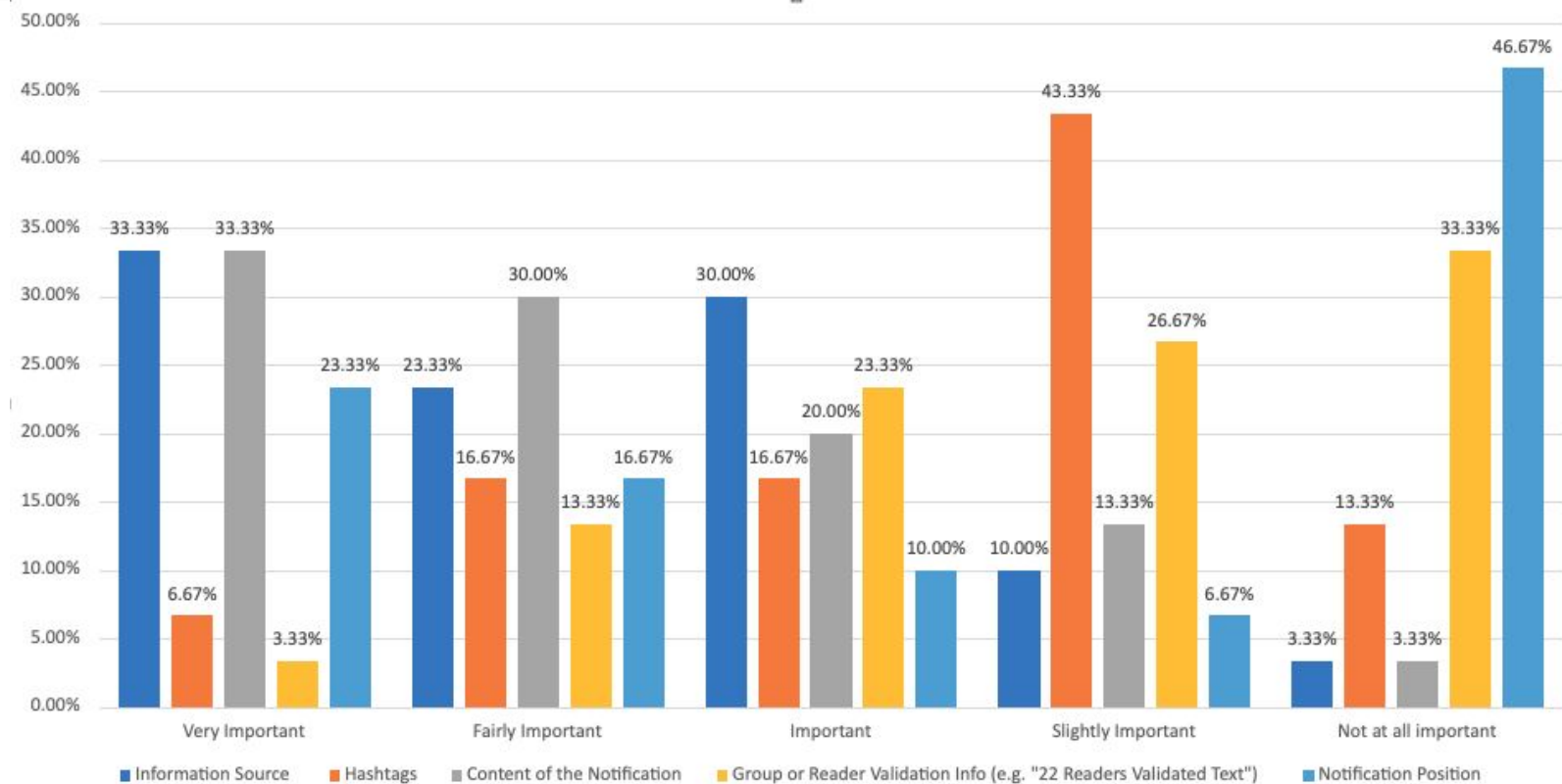
Evaluation - System Usability Study

Question
Q1: I think that I would like to use this feature frequently
Q2: I found the feature unnecessarily complex
Q3: I thought the feature was easy to use
Q4: I think that I would need the support of a technical person to be able to use this feature
Q5: I found the various functions in this feature were well integrated
Q6: I thought there was too much inconsistency in this feature
Q7: I would imagine that most people would learn to use this feature very quickly
Q8: I found the feature very cumbersome to use
Q9: I felt very confident using the feature
Q10: I needed to learn a lot of things before I could get going with this feature

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# Results - System Usability Study
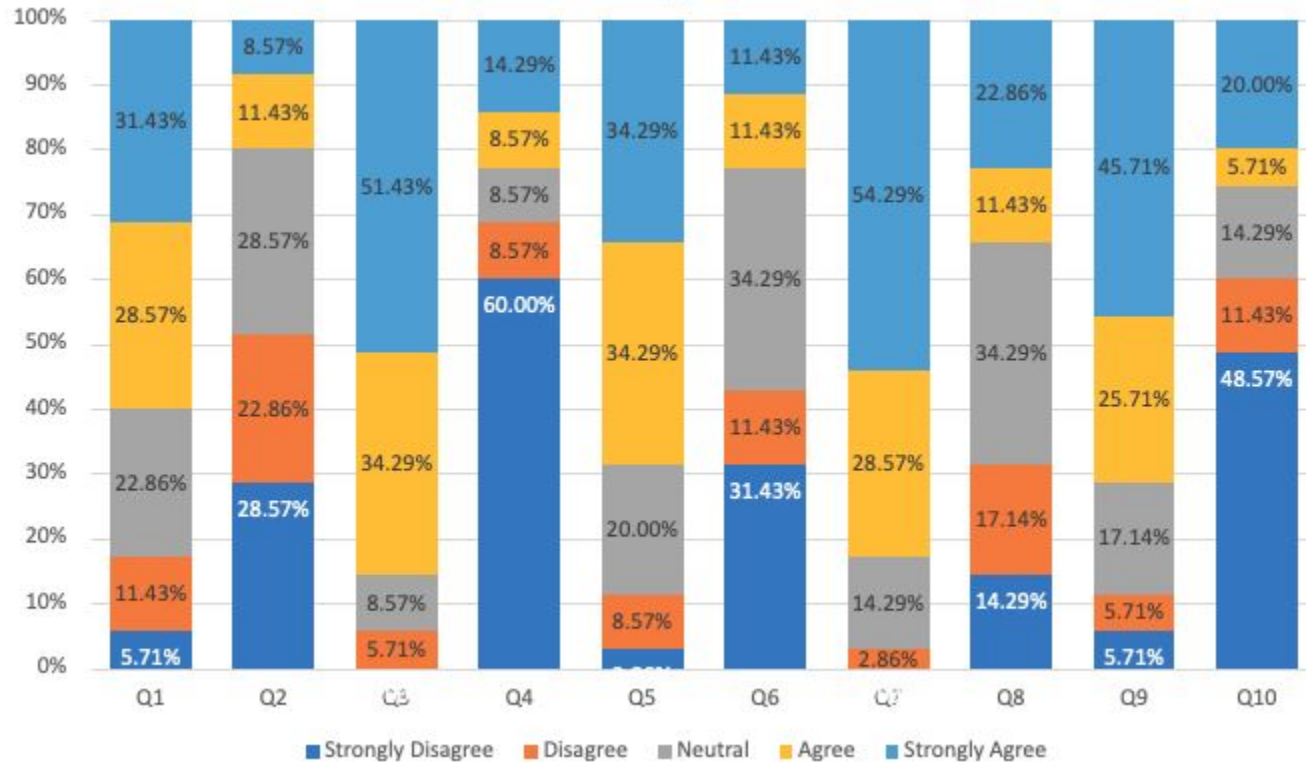
Results - System Usability Study

- System Usability Threshold 68
- System Usability Score 69.78

Computer Emotion Scale

	None of the Time	Some of the Time	Most of the Time	All of the Time
satisfied	20.00%	31.43%	31.43%	17.14%
excited	28.57%	37.14%	20.00%	14.29%
curious	14.29%	25.71%	22.86%	37.14%
Happiness	**20.95%**	**31.43%**	**24.76%**	**22.86%**
disheartened	65.71%	28.57%	2.86%	2.86%
dispirited	71.43%	20.00%	5.71%	2.86%
Sadness	**68.57%**	**24.29%**	**4.29%**	**2.86%**
anxious	71.43%	22.86%	5.71%	0.00%
insecure	68.57%	25.71%	2.86%	2.86%
helpless	68.57%	8.57%	11.43%	11.43%
nervous	68.57%	17.14%	14.29%	0.00%
Anxiety	**69.29%**	**18.57%**	**8.57%**	**3.57%**
irritable	57.14%	31.43%	5.71%	5.71%
frustrated	62.86%	25.71%	5.71%	5.71%
angry	77.14%	8.57%	11.43%	2.86%
Anger	**65.71%**	**21.90%**	**7.62%**	**4.76%**

Fake News Questionnaire
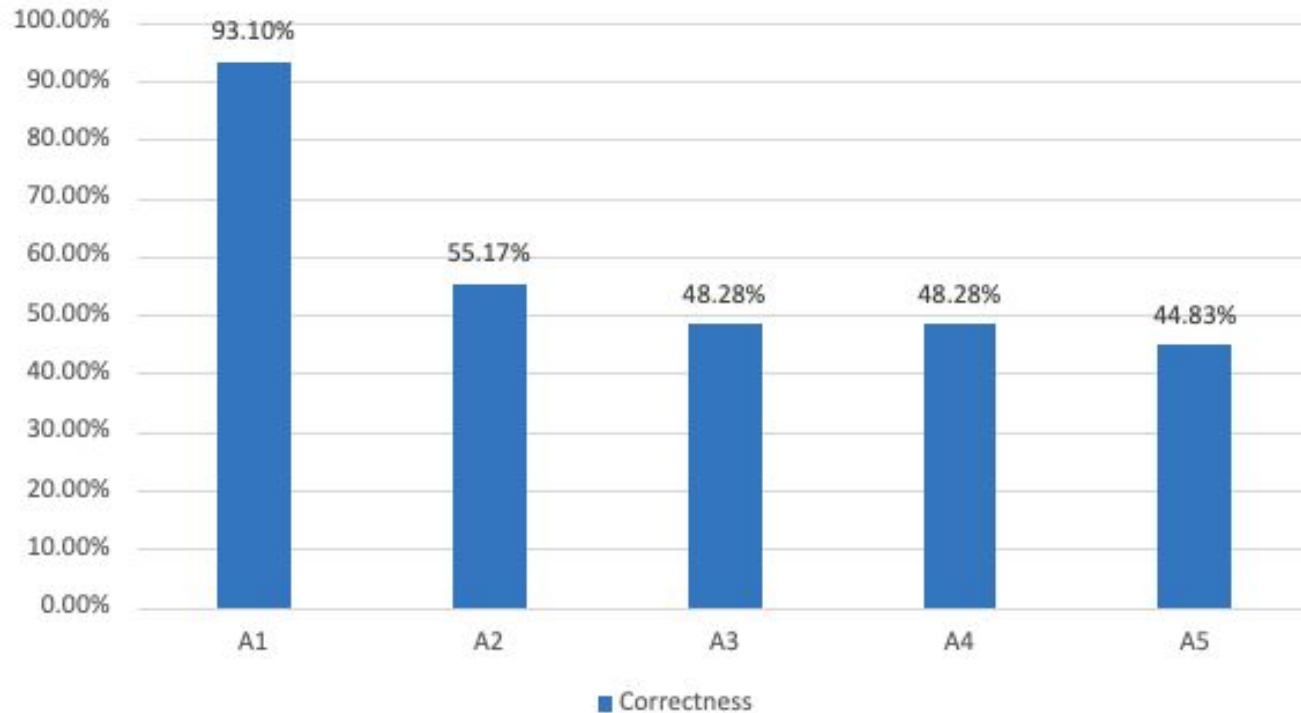
Fake News Questionnaire

- Average Correctness: 57.93%
- Median Correctness: 48.28%
- Notifications With Additional Information: > 6.61%

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Thanks for Listening! Questions?

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