VIS 2021

InfoColorizer: Interactive Recommendation of Color Palettes for Infographics

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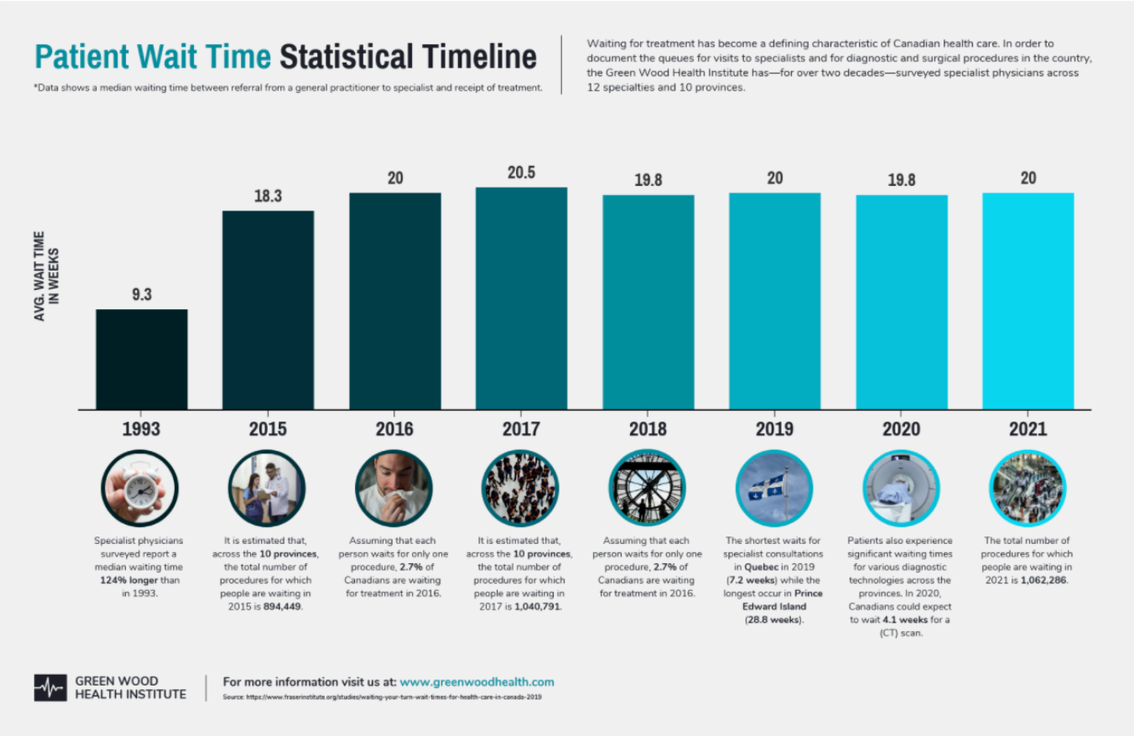
Adobe

Introduction
Infographics



Left: https://fi.venngage.com/templates/infographics/patient-wait-time-statistical-timeline-76e84d08-7c70-48bc-8cb4-3f6e1a066d58

Right: https://visme.co/blog/timeline-infographic-template/

Introduction

Infographics

Introduction

Color Palette Design

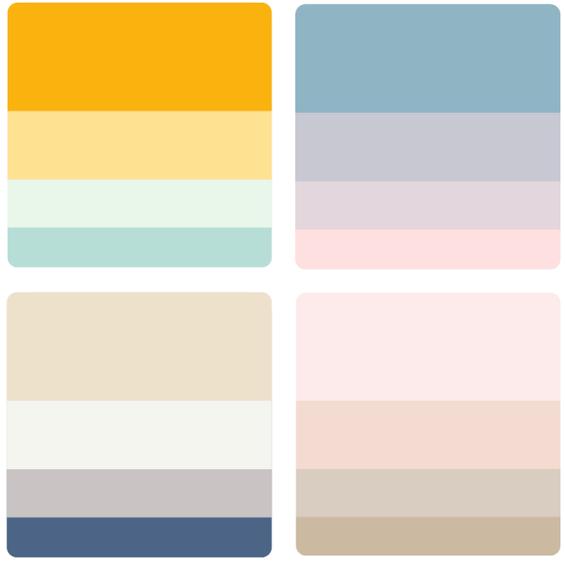
Designing effective color palettes for an infographic needs to consider many factors simultaneously.

- spatial layout
- semantic meaning
- aesthetics
- perceptual effectiveness

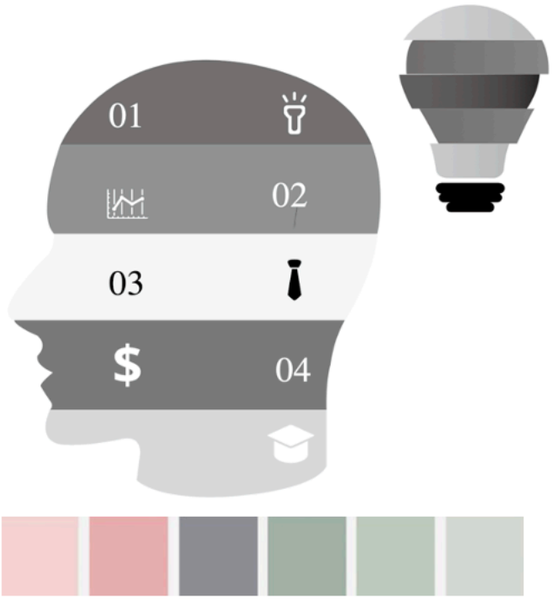
Introduction

Challenges

Creating a palette from scratch requires users to have relevant expertise.



Using predefined palettes limits users' freedom.



Applying a palette to an infographic is complicated due to the spatial layout of elements.

Introduction

Goals

1

G1: Lower expertise barrier for crafting professional palettes.

2

G2: Incorporate consideration of spatial arrangements of elements.

3

G3: Offer flexibility to embed different kinds of user preferences.

4

G4: Support simple user interactions and iterative design of color palettes.

InfoColorizer

An interactive tool that allows general users to effectively design color palettes during infographic creation, using a data-driven approach.

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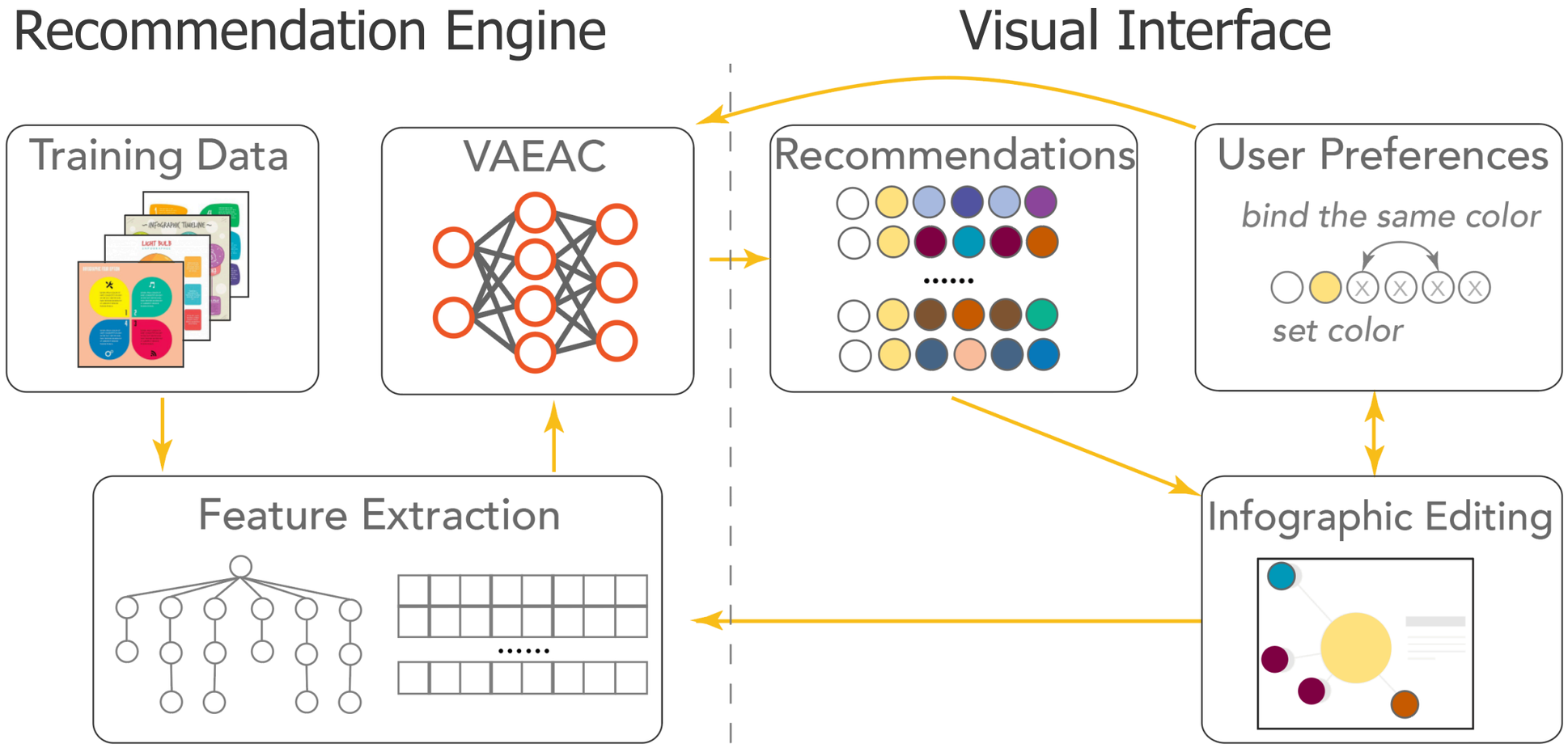
Pipeline



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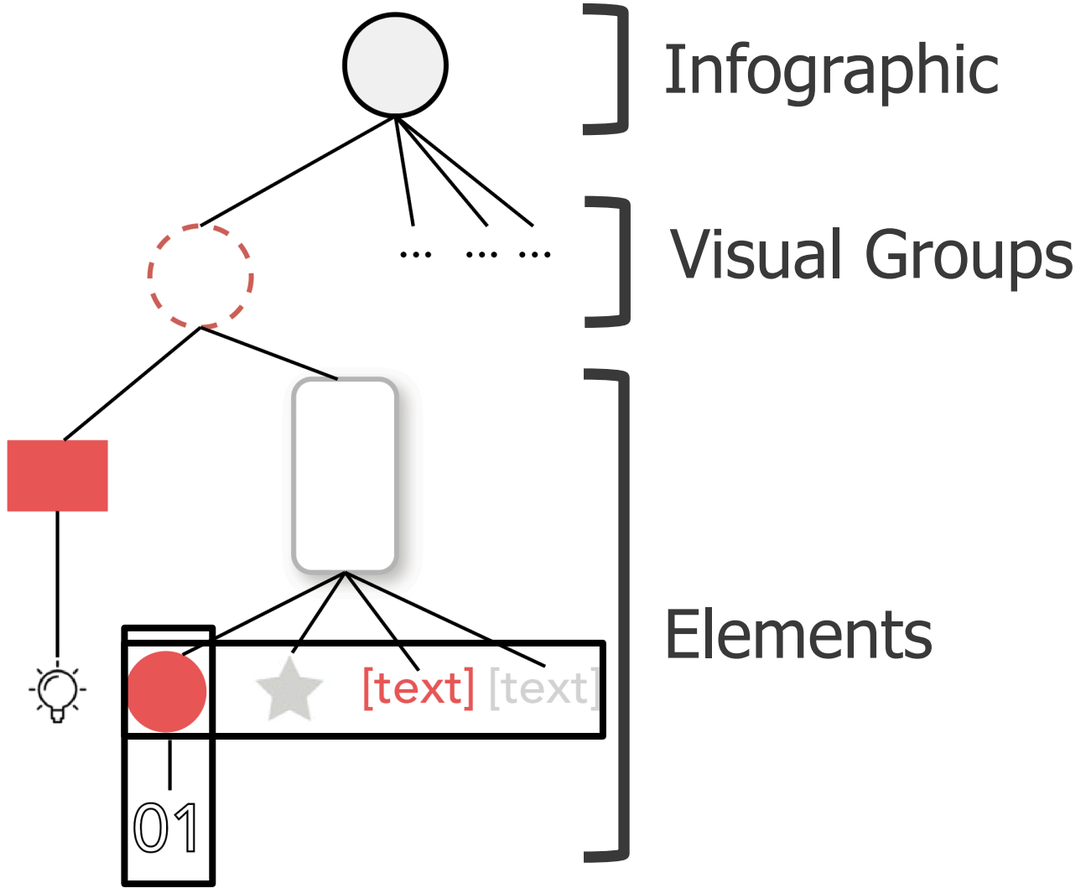
Characterize Infographics with Various Features



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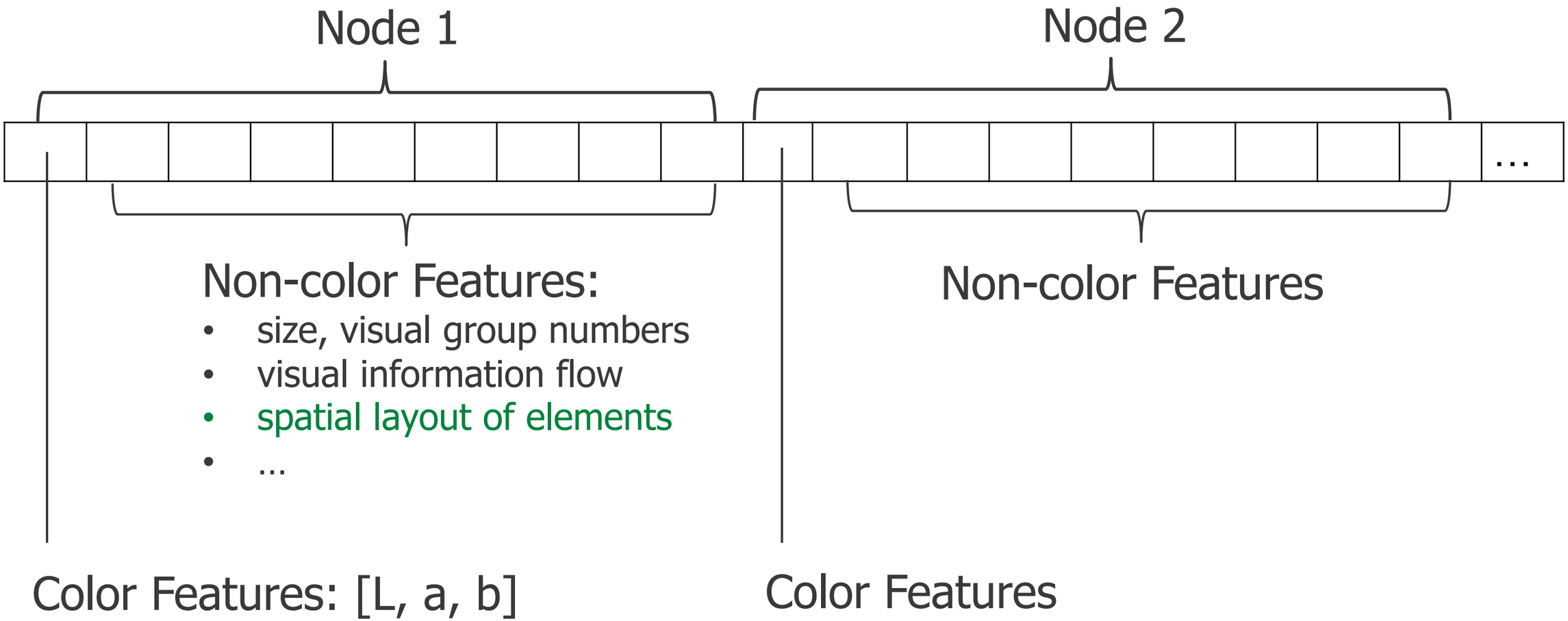
Characterize Infographics with Various Features



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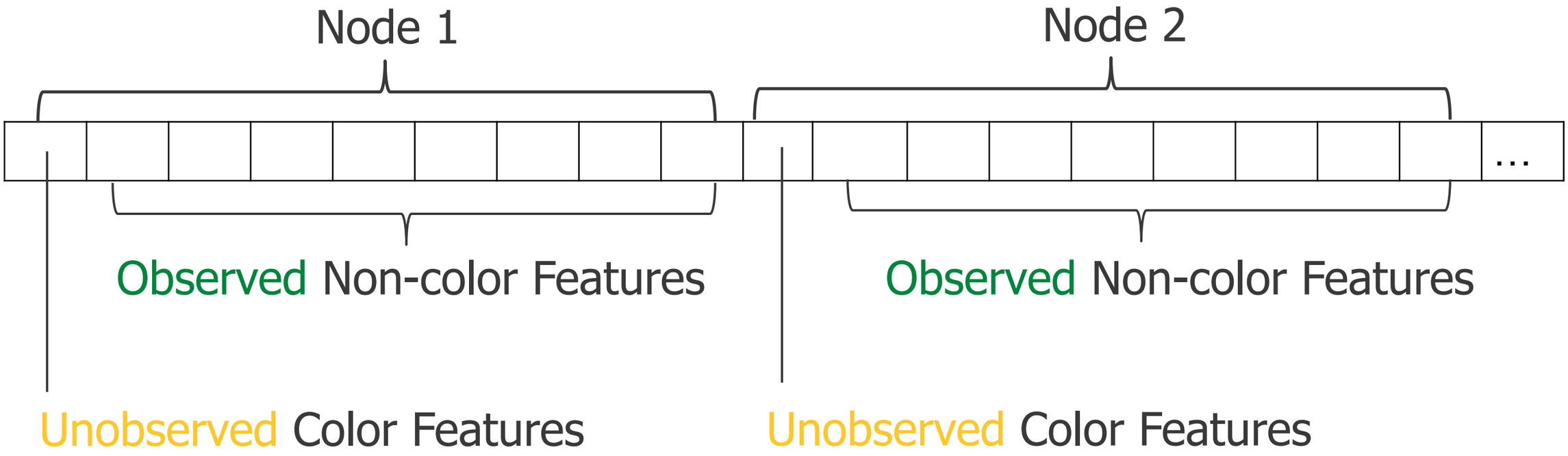
Lower Expertise Barrier with Recommendation

G2: Consider spatial arrangements of elements.



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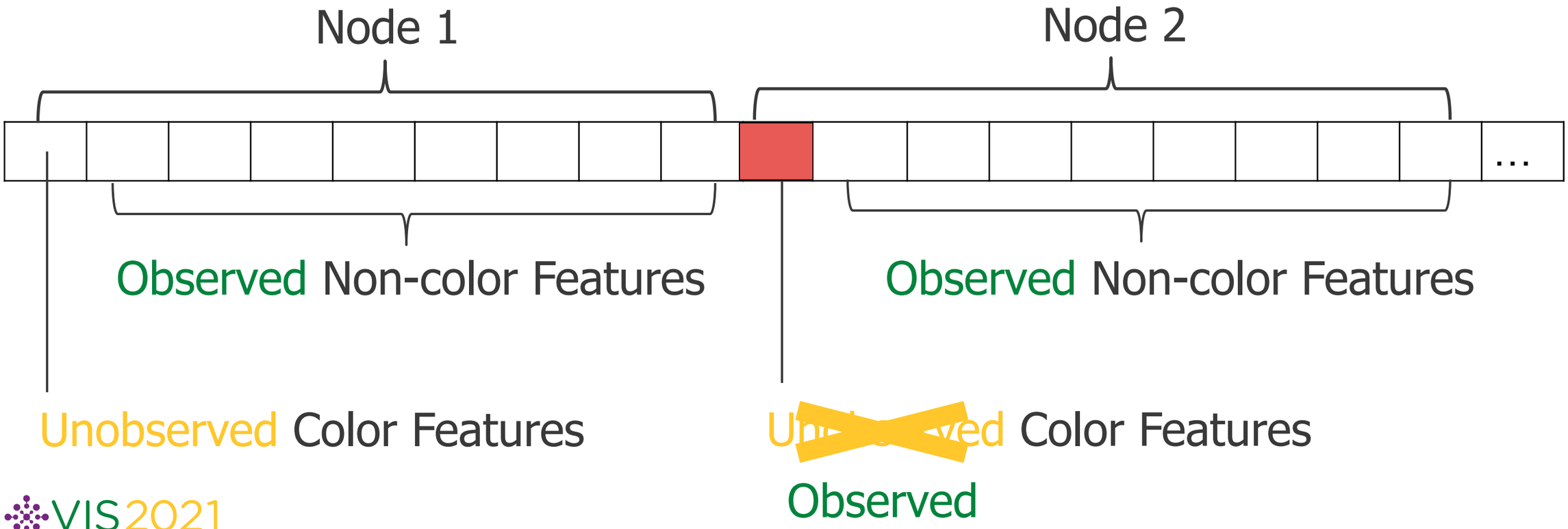
Lower Expertise Barrier with Recommendation

G2: Consider spatial arrangements of elements.

G3: Offer flexibility to users for their color preferences.



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Lower Expertise Barrier with Recommendation

The recommendation process is framed as a conditional generative problem, and three models are considered: VAEAC (Ivanov et al., 2019), GAIN (Yoon et al., 2018), and MICE (Buuren et al., 2011).

	NRMSE	CRS	CVS
VAEAC	**0.6543**	**2.4826**	5.6748
GAIN	2.4574	4.1742	4.1075
MICE	15.6098	16.5096	**27.6199**
VAEAC (non-spatial)	1.1536	3.6874	6.429

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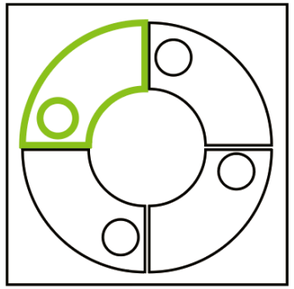
Lower Expertise Barrier with Recommendation

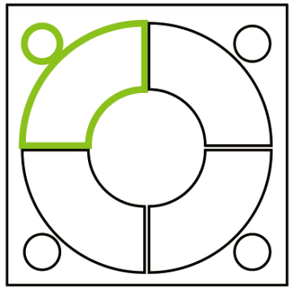
The idea of the conditional generation behind VAEAC with an example of how spatial arrangements influence the recommended colors:

VAEAC with spatial features

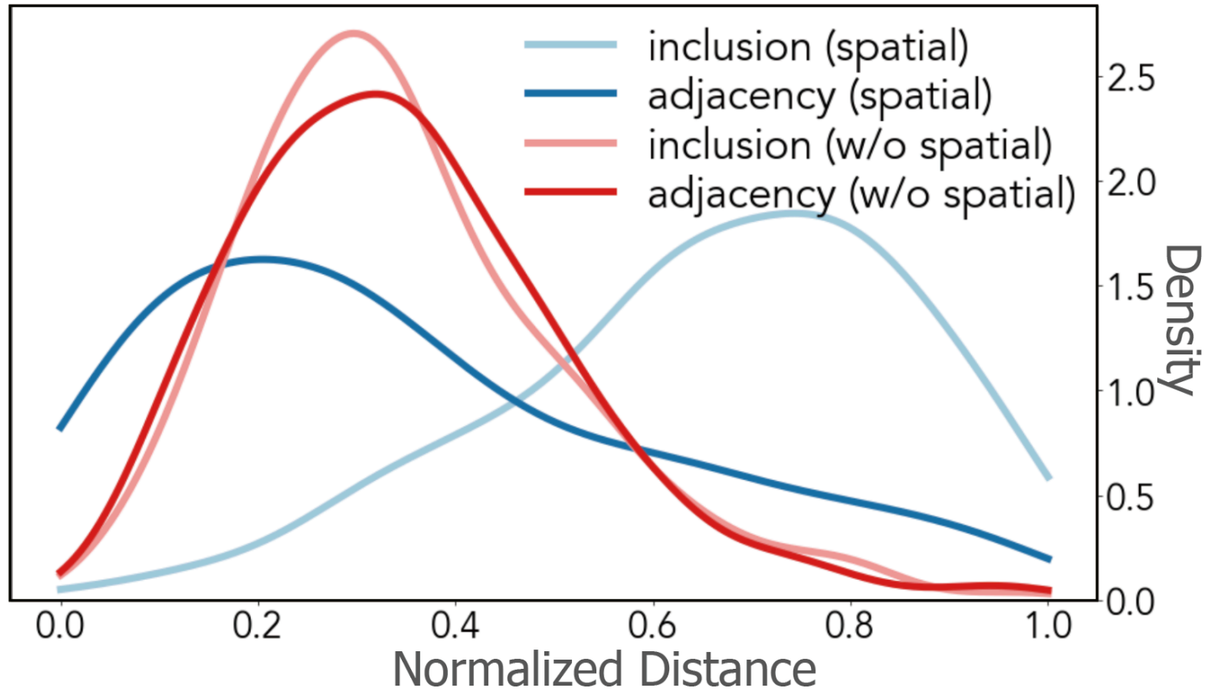


inclusion

VAEAC without spatial features



adjacency



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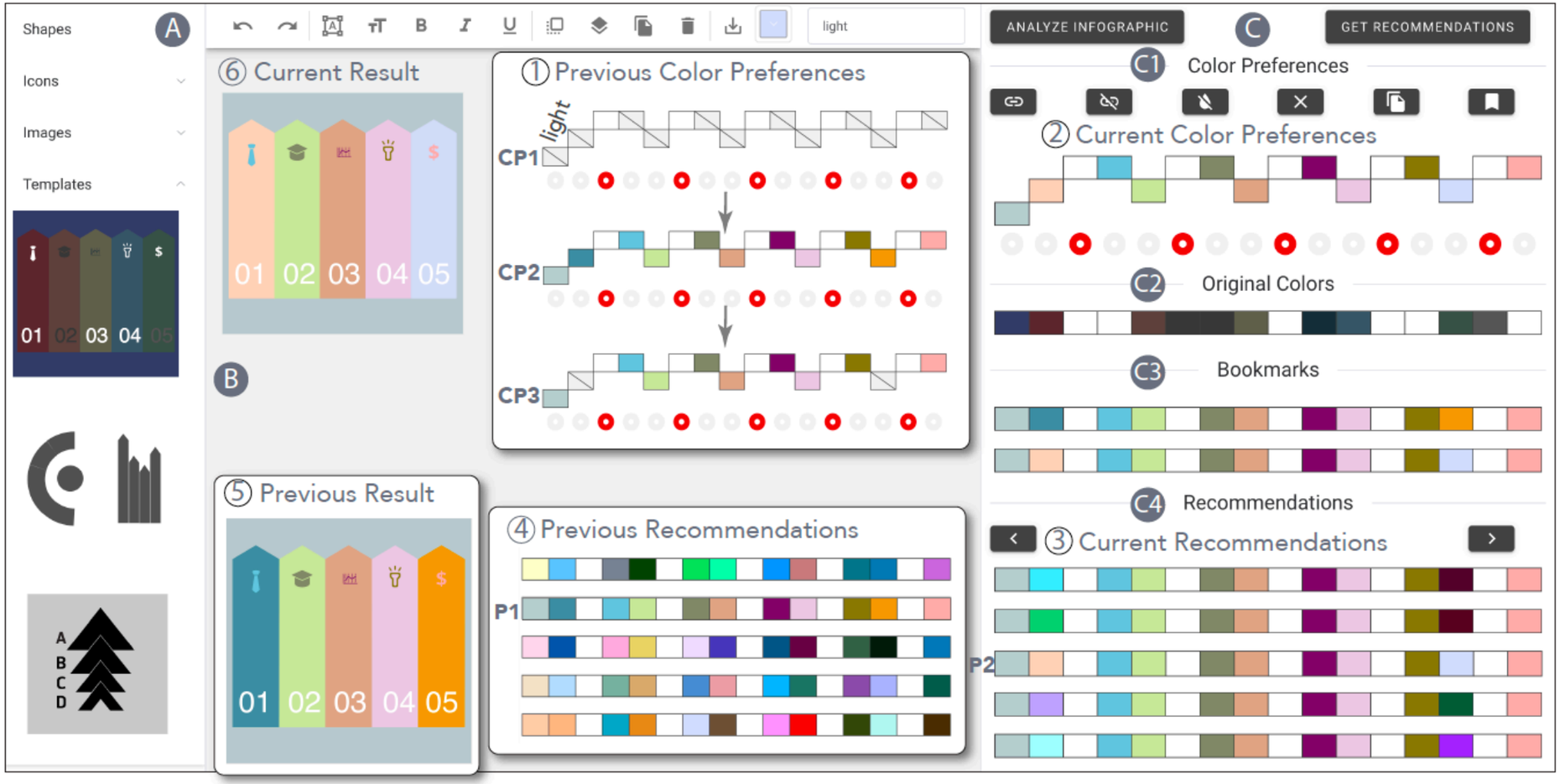
Support User Workflow with Visual Interface



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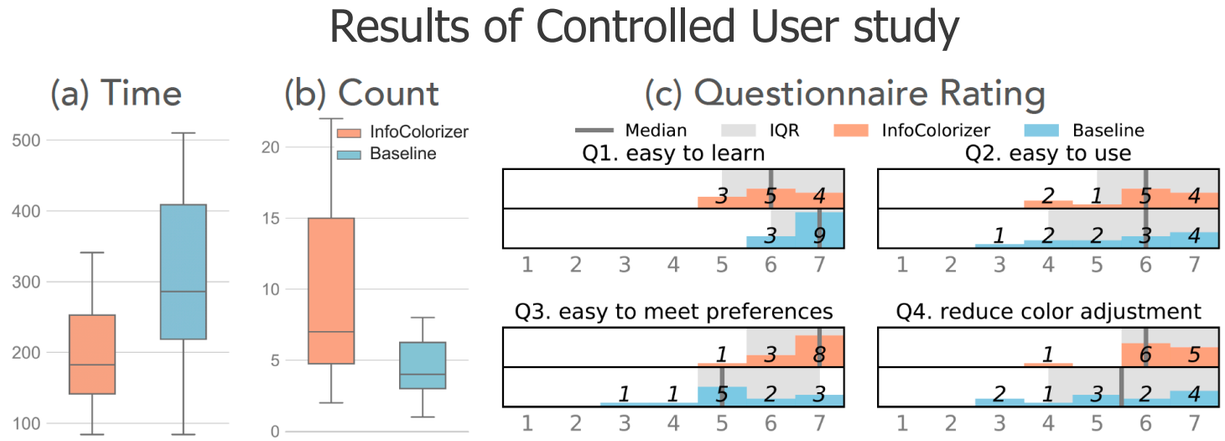
Evaluation

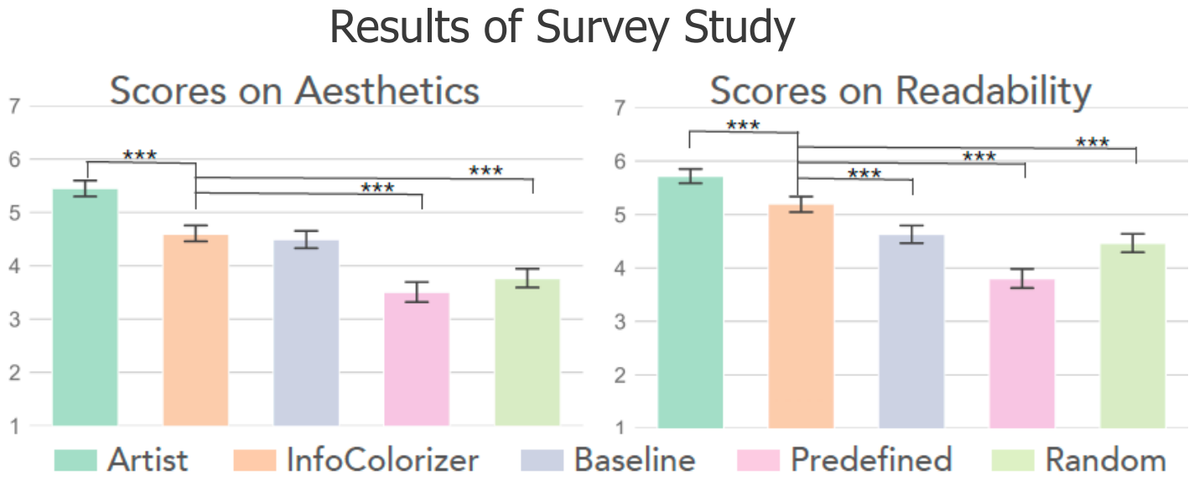
- Case Study
- Controlled User study

  Novice Creators
- Survey Study

  Infographic readers
- Interview Study

  graphical design experts





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Conclusion

Contributions

- A novel data-driven approach that recommends palettes for infographics by leveraging deep learning techniques with the consideration of elements' spatial arrangements, while offering flexibility for user preferences of colors.
- An interactive tool, InfoColorizer, that incorporates the data-driven recommendation and makes it easily accessible and manageable to users, along with the support of iterative design and basic infographic editing.
- Insights and results from a series of evaluations covering case studies, a controlled user study, an online survey, and an interview study.