Summary of IEEEVIS 2023 Review

Review Pattern

1. Length
    a. short: less than 5,000 words,
    b. standard-length: 5,000-12,000 words (average of 7,000–8,000 words), or
    c. excessively long: over 12,000 words.
2. My knowledge
    a. Expert
    b. Knowledgeable
    c. Passing Knowledge
    d. No Knowledge.
3. Originality: presence of new ideas or approaches
    a. Very high originality
    b. High originality
    c. Medium originality
    d. Low originality
    e. Very low originality
4. Significance: Paper's contribution
    a. Very high significance
    b. High significance
    c. Medium significance
    d. Low significance
    e. Very low significance
5. Research Quality: how confidently the reader can take up the contribution of the work, judged by the context in which the work is situated
    a. Very high research quality
    b. High research quality
    c. Medium research quality
    d. Low research quality
    e. Very low research quality
6. Contribution compare to length
    a. The paper length was commensurate with its contribution.
    b. The paper was too short to address its claimed contribution.
    c. The paper was too long in addressing its claimed contribution.
7. Summary
8. My opinion

It's Like Being on Stage: Exploring the Performer-Audience Connection through Multi-modal Dance Performance with Haptics

1. Length: standard-length: 5,000-12,000 words (average of 7,000–8,000 words)
   It is leanly more towards excessively long though
2. My knowledge: Passing Knowledge
3. Originality: High originality
   Although Haptics have been around for long time, it has rarely been applied in Live dance performances
4. Significance: Medium significance
   The paper focuses more on the process than the haptic technique
5. Research Quality: Medium research quality
6. Contribution compare to length: The paper was too long in addressing its claimed contribution
7. Summary:
   The study is an exploration of the integration of haptic technology in dance performances. Divided into two phases, the research engaged both dancers and a multidisciplinary performance team in co-designing haptic patterns to convey somatic information. The study's two public performances, supported by audience feedback and mixed-method evaluations, demonstrated the effectiveness of the haptic experience in enhancing connectedness to the stage and audience engagement. This research showcases the impact of using tactile sensation to convey dancers' experiences.

8. My opinion:
   I really enjoyed delving into the realm of combining tactile elements with live performances. The methodology outlined in this study is certainly deserving of applause, as it provides a well-structured framework that future research could greatly benefit from. One aspect that stands out is the study's strong commitment to a user-centric approach, which I find quite commendable. It's also worth noting that the experiment setup, which allows viewers to remove the bands if they find the vibrations uncomfortable, is considerate and viewer-friendly. Moreover, the paper boasts a thorough section on related work, particularly in the context of tactile applications in music, and the feedback loop within the study was a standout feature.

   On the flip side, it's worth mentioning that, in my view, the paper places a heavier emphasis on the overall process rather than delving into the specifics of the technique used to map dance moves to vibrations. This leaves certain questions unanswered, such as whether the dance moves were repeated and whether the vibrations were standardized. Additionally, when discussing viewer feedback, the authors include information about the educational qualifications of the viewers. This raises the question of whether the authors are suggesting a potential correlation between the educational backgrounds of the viewers and their engagement with tactile-incorporated performances.

Dead or Alive: Continuous Data Profiling for Interactive Data Science

1. Length: standard-length: 5,000-12,000 words (average of 7,000–8,000 words)
2. My knowledge: Knowledgeable
3. Originality: Medium originality
4. Significance: Very high significance
5. Research Quality: Very high research quality
6. Contribution compare to length: The paper length was commensurate with its contribution
7. Summary:
   The paper deals with one of the crucial steps in data Analysis i.e, data profiling. It sheds light on the current state of the art and methods data scientists use to analyze their data. It talks about how the process is mostly manual and time-consuming which leads to scientists ignoring this part. To address this, the study proposes continuous data profiling, introducing a system called AutoProfiler. AutoProfiler offers three key features:
   a. automatic display of data distributions and summary statistics for improved data understanding,
   b. live updates, ensuring visualizations are always accessible and updated in real-time as data changes, and
   c. support for follow-up analysis and code documentation.
   A user study with 16 participants evaluated two(Alive: which updates the data immediately after every transformation and Dead: which updates visualization on demand. Hence the name) versions of the system, both of which proved effective in facilitating insight discovery. Participants favored the live updates for real-time verification and on-demand profiles for reviewing past visualizations. Additionally, a case study demonstrated how AutoProfiler helped domain scientists make serendipitous data discoveries. This research has implications for the design of future tools offering automated data analysis support
8. My opinion
   One notable advantage of this tool is its seamless integration with Jupyter Notebook, enabling data scientists to seamlessly include Autoprofiler in their workflow. The disparity in error detection rates between Autoprofiler and manual methods is significant. It could have introduced a more unbiased setup if analysts were not provided with information about the expected number of errors to be identified.

Eleven Years of Gender Data Visualization: A Step Towards More Inclusive Gender Representation

1. Length: standard-length: 5,000-12,000 words (average of 7,000–8,000 words)
2. My knowledge: Knowledgeable
3. Originality: Low originality
4. Significance: Medium significance

5. Research Quality: Low research quality
6. Contribution compare to length: The paper was too long in addressing its claimed contribution.
7. Summary:

This study analyzes how gender is represented as a data dimension in data visualizations and suggests a set of considerations related to visual variables and annotations for gender-related data. Gender is a frequently encountered demographic factor in various datasets, and its representation in visualizations can unintentionally perpetuate stereotypes and biases. The objective of this research is to initiate a conversation regarding the responsible and thoughtful representation of gender in data visualizations, shedding light on the nuances of choosing visual elements and terminology. The study involved the analysis of gender visualizations and captions across multiple scientific communities and highlighted community-specific representation types and the prevalence of color hue in gender-related data visualization. The paper concludes with discussions and recommendations for gender visualization based on their analysis and existing literature, as well as suggestions for organizations involved in large-scale data collection.

8. My opinion:

The paper does what it is intended to do, start a conversation about gender representation in data visualization space. However, it did not convince me to look back on my visualization to see if I could come up with a different conclusion if I were to use non-confirming colors for the gender. The paper is really long for what it aims to achieve. 25% of the paper was just presenting results in the form of numbers.

I don't think it is all that bad to use stereotypical colors if the users are able to carry out the task efficiently without introducing any biases.

My Model is Unfair, Do People Even Care? Visual Design Affects Trust and Perceived Bias in Machine Learning

1. Length: standard-length: 5,000-12,000 words (average of 7,000–8,000 words)
2. My knowledge: Expert(Between passing knowledge and expert)
3. Originality: High originality
4. Significance: High significance
5. Research Quality: High research quality
6. Contribution compare to length: The paper was too long in addressing its claimed contribution.
7. Summary

   This research paper investigates the role of visualization technology in addressing bias in machine learning models and its impact on stakeholders' perceptions, trust, and adoption decisions. Conducting controlled experiments with over 1,500 participants, the study uncovers that men and women prioritize fairness and performance differently, with women showing a higher propensity to trust fairer models. Moreover, the research demonstrates the significant influence of visual design choices on stakeholders' perceptions, highlighting the importance of explicit disclosure of model bias. These

findings contribute to our understanding of how to design visualization systems that promote fairness and trust in machine learning, offering practical guidance for mitigating bias in AI systems.

8. My opinion:
This paper offers a compelling exploration of how gender influences the perception of fairness in machine learning models. It presents its ideas in a highly accessible manner, making it easy to comprehend. Personally, I found the section discussing tools for identifying bias in ML models to be particularly intriguing, as it provided me with tools that I missed while working on the related work section for my project.

Dataopsy: Scalable and Fluid Visual Exploration using Aggregate Query Sculpting

1. Length: standard-length: 5,000-12,000 words (average of 7,000–8,000 words)
2. My knowledge: Knowledgeable
3. Originality: Very high originality
4. Significance: Very high significance
5. Research Quality: Very high research quality
6. Contribution compare to length: The paper length was commensurate with its contribution
7. Summary
Aggregate Query Sculpting (AQS) is an innovative approach for querying and visualizing large-scale multidimensional data. It offers inherent scalability by commencing the visualization process with a single mark representing an aggregation of the entire dataset. Users can then explore the data progressively through a sequence of operations, denoted as P6, which include pivoting to focus on specific attributes, partitioning facets in space for organization, peeking inside subsets with visual representations, piling to merge subsets, projecting subsets for closer examination, and pruning aggregates not currently of interest. This methodology is validated through DATAOPSY, a prototype implementation of AQS designed for seamless interaction on desktop and touch-based mobile devices. The practical application of AQS and DATAOPSY is demonstrated through two case studies and three real-world examples, showcasing their effectiveness in facilitating data exploration and analysis.

8. My opinion
This paper is truly engaging, and the prototype tool it introduces is exceptionally impressive. I had the opportunity to discover two novel tools designed for visual bias detection in machine learning datasets. Initially, I assumed the focus was solely on presenting the tool, but I soon realized it was more centered around the concept of AQS. What particularly caught my attention was the experiment conducted to identify biases. I observed that the tool proves highly valuable in bias detection after model predictions, yet I firmly believe it offers an equally valuable perspective on the data itself, simplifying bias detection without reliance on model predictions. As the paper mentions, the tool is

remarkably fluid in its operation, although there is a learning curve involved. However, once users become acquainted with its functionalities, it provides valuable insights.