Pecha Kucha write up summary

The summaries below are quoted and paraphrased in my understanding from the author's articles; it has the same information as the Pecha Kucha slide deck.

Article 1: Web-based Immersive Analytics in handheld Augmented reality.

The authors [1]introduced their paper by asking why research in analytical reasoning is focused on the use of virtual reality rather than mixed reality or augmented reality. Their [1]point illustrates two reasons
1) The natural challenges that come with MR applications such as interactions
2) The tools used for creating MR projects are less tailored towards MR but toward VR projects. They mentioned that the tools lacked essential mechanisms such as data loading and binding

The authors[1] referenced the Immersive analytics paper mainly to show related work and as exemplars of creating immersive experiences.

The goal of this paper is to build an immersive AR visualization for mobile devices. The authors explored web-based technologies such as D3.js, A-frame, and the Argon AR framework. They used web-based tools as they work efficiently with visualization tools and data manipulation tasks.

The authors built a prototype using the mentioned web technologies and visualized their data graphically in an augmented space(ex: bar charts and scatter plots in AR). They built their prototype by using the frameworks mentioned above, mainly by reading data from a JSON file, mapping it to 3D bars using A=frame's <A-box> tag and finally manipulating the data and color information using D3.js.

Generally, their results show that the web tools played harmoniously together. Other test results (preliminary user study) showed that the tools were robust; however, users noted a need or some components in AR such as annotations on the bars.

Other thoughts:

The paper was published in 2017, yet the authors note that to their knowledge, no work has been done using these frameworks. I was amazed and shocked that no one built a prototype using web frameworks before that year.

Article 2: Data Visualization on Interactive Surfaces: A Research Agenda

The article[2] examines interactive tabletop surfaces (ITS) where data is visualized on a flat surface and users can interact with the data (ITS). The paper discusses the opportunities the research space presents by analyzing the visual analytics problems faced with ITS and provides readers with new ideas of research.

The authors [2] suggest that researchers should consider three types of challenges to better take advantage of visualization and research possibilities (in this case for ITS). The mentioned challenges are in three domains: technical, design and social.

The technical challenges[2] faced with ITS are related to surface types and combining multiple ITS. The authors prompted researchers to explore surface types and consider what data types are more suitable where(i.e., what data matches what display).

The design challenges[2] include how to better design and represent data in ITS, handle touch integration and manage data dimensionality (translation of multidimensional data into the 2d surface). The authors suggest areas of research such as creating guidelines, toolkits and researching vocabulary usages; as defining it reduces a need to learn particular interactions for each use case.

Lastly, the authors [2] discuss the social challenges faced with ITS, mainly in areas of collaboration and evaluation. The authors recommend designing systems (ITS) with stepwise instructions in areas where cooperation is needed between multiple users. The authors[2] mentioned a need for dedicated research in evaluation methodology, as evaluating results is hard in social situations with so many users using the same space.

I find it interesting how researching one area (ITS) can lead to so many possibilities of research!

References:

[1] Ritsos, Panagiotis D., J. Jackson, and Jonathan C. Roberts. "Web-based Immersive Analytics in Handheld Augmented Reality." Posters of IEEE VIS (2017).

[2] Isenberg, Petra, Tobias Isenberg, Tobias Hesselmann, Bongshin Lee, Ulrich Von Zadow, and Anthony Tang. "Data visualization on interactive surfaces: A research agenda." IEEE Computer Graphics and Applications 33, no. 2 (2013): 16-24.