

**regulate...
pfunk error**

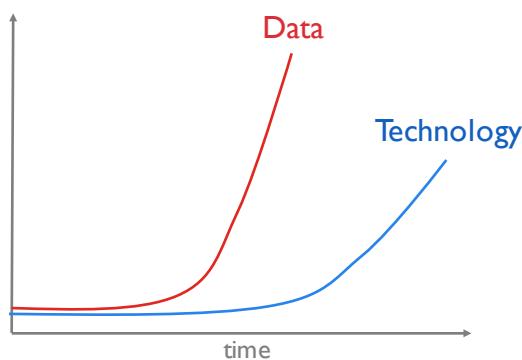
Daniel Alabi, Eugene Wu



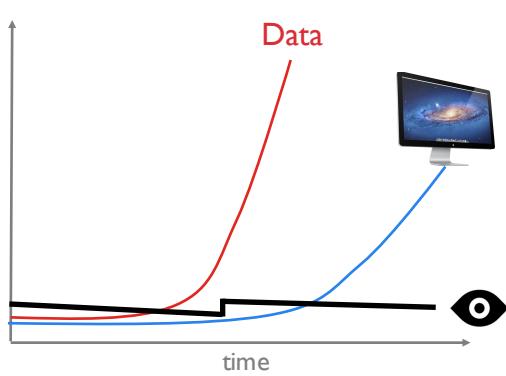
Interactive Visualization Fast & Accurate

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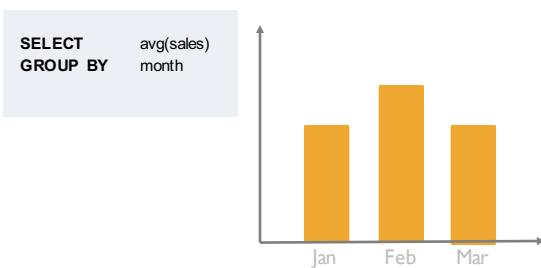


Millennials (Born 1981-1996):

- Nearly four in 10 millennials spend at least nine hours on digital devices each day (37.4 percent)
- Nearly seven in 10 (68 percent) report symptoms of digital eye strain

Inaccurate but perceptually accurate

Naïve Approach



Naïve Approach



Context Dependent



$$P(\text{true values} \mid \text{context}) = \epsilon$$

$$P(80 \mid \text{barchart}, \text{height}) = \pm 5$$

$$P(30 \mid \text{barchart}, \text{height}) = \pm 2$$

$$P(80 \mid \text{barchart}, \text{color}, \text{JET}) = \pm 30$$

How to express?

$$P(\text{val} \mid \text{chart type}, \dots)$$

$$P(\text{val} \mid \text{judgment task}, \dots)$$

$$P(\text{val} \mid \text{fatigue}, \dots)$$

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$$P(\text{true values} \mid \text{context}) = \epsilon$$

$$P(80 \mid \text{barchart}, \text{height}) = \pm 5$$

$$P(30 \mid \text{barchart}, \text{height}) = \pm 2$$

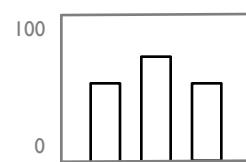
$$P(80 \mid \text{barchart}, \text{color}, \text{JET}) = \pm 30$$

$$P(\text{val} \mid \text{chart type}, \dots)$$

$$P(\text{val} \mid \text{judgment task}, \dots)$$

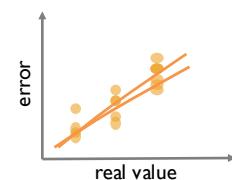
$$P(\text{val} \mid \text{fatigue}, \dots)$$

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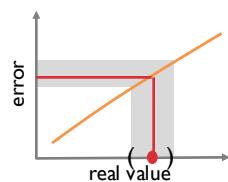


Estimate the height of the middle bar as a percentage of the total chart height.

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est. value \in real value $\pm P(\text{real value})$



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HCI Community Perceptual Studies

Perceptual Functions

Database Community Optimizations

2 Direction

Extending perceptual functions

Data collection tools

Univariate Height of middle bar



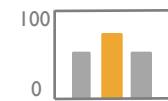
Bivariate Relative height of the two bars



N-variate Overall trend of the bars

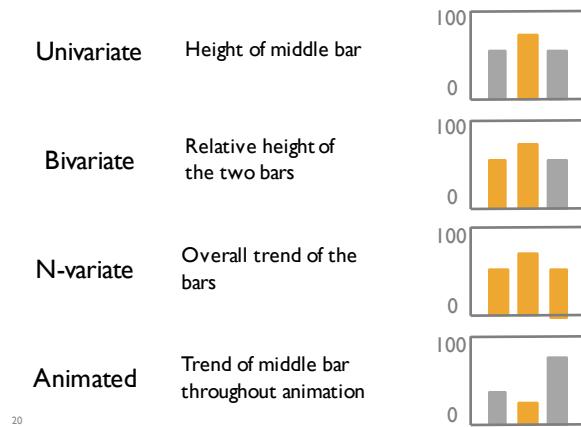
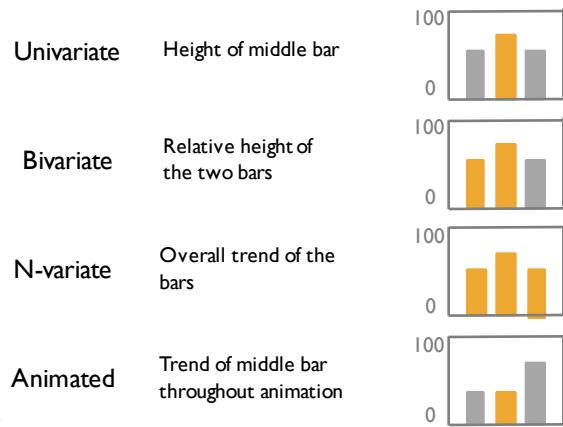
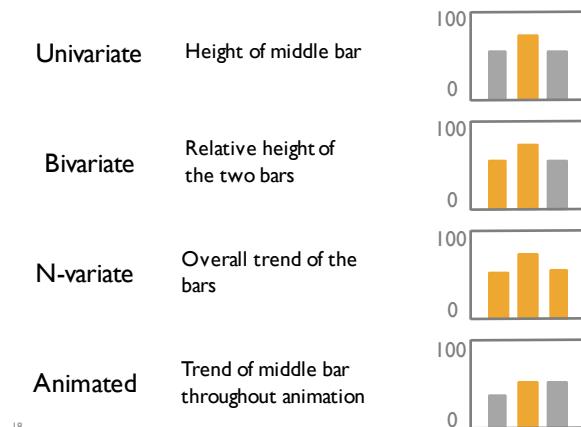
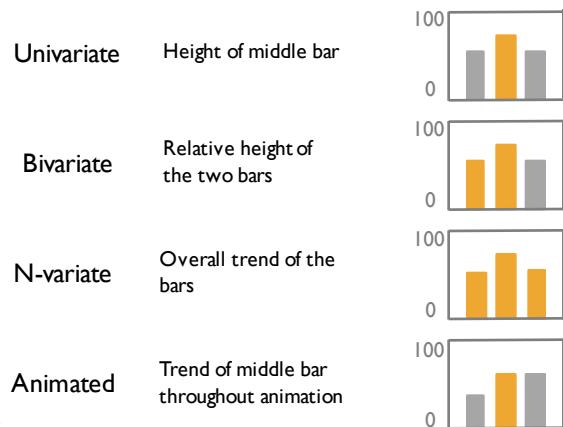


Animated Trend of middle bar throughout animation



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Univariate

Bivariate

N-variate

Animated

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Wins for each class of pfunks

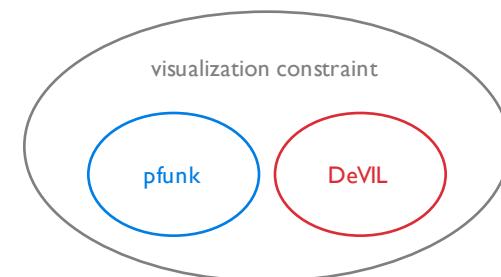
Graphical Perception as a Service

The screenshot shows a web-based application for managing experiments. At the top, there are buttons for 'Create New Experiment' and 'Payments'. Below this, a list of experiments is shown, with 'test' and 'linear1' being the ones currently listed. Each experiment entry includes an 'Edit' button. To the right of the experiments, there is a section titled 'test' with a link to 'test': /gpais/experiment/www/test/. Below this, there are buttons for 'Remove from MTurk' and 'Download Data'. Further down, there is a section titled 'Upload files' with instructions about file uploads to MTurk. It includes a 'Choose Files' button, an 'Upload' button, and a list of associated files: main.css, README.md, and api.js.

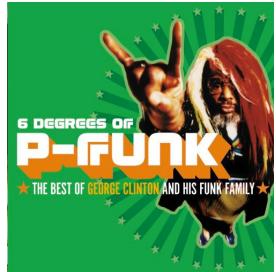
Open Questions

- What judgment task?
- Are simple Contexts sufficient?
- More than for performance?

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the pfunk era

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