

Origins of Bias

Representation Bias

- Most research studies tend to be conducted in western countries with adaptive systems developed by designers in the west (Blanchard, 2012)
 - Little to no research on the generalizability when used in non-western contexts despite evidence on differences in student use (Ogan et al., 2012)

Representation Bias

- Most research studies tend to be conducted in western countries with adaptive systems developed by designers in the west (Blanchard, 2012)
- Small-scale experiments also tend to recruit from a convenience sample due to practical constraints of research projects
 - For example, undergraduate, middle-class students in the United States (Kimble, 1987)
 - These participants are likely to exhibit significant differences in their behavior than other subpopulations (Henrich et al., 2010)

Henrich, J. et al. (2010). Most people are not WEIRD. *Nature*.

Kimble, G. A. (1987). The scientific value of undergraduate research participation. *American Psychologist*.

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- Invalidates assumptions for student subpopulations not represented in the experiments informing upstream components

Measurement Bias

- Due to issues in data collection methods
- Reliability of measurements across different student subpopulations
 - For example, coder bias due to cross-cultural affect coding
 - Poor performance of automated facial recognition for female students and those with darker skin tones (Lohr, 2018)
 - Demographic differences in the reliability of self-reports (e.g., age, culture)

Historical Bias

- Forming theories and design choices by observing the world as it exists (including its biases)
 - For example, earlier cameras were designed to bring out high contrast and better resolution for white skin color (Roth, 2009)
- Historical biases embedded in upstream sources get perpetuated by downstream applications
 - For example, a predictive model that then automates the biased decision-making at a potentially larger scale

Origins of Bias

- Representation Bias
- Measurement Bias
- Historical Bias
- Aggregation Bias
- Evaluation Bias
- Deployment Bias

For your example model(s), please share some potential **origins of biases in them.**

Discussion Board Question