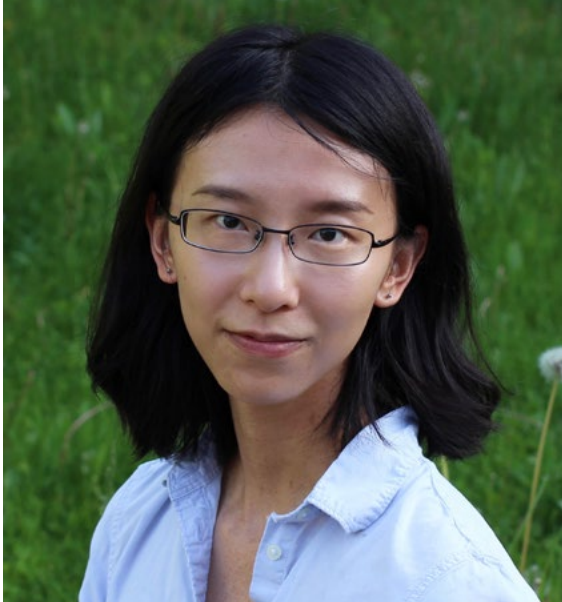




## DISSERTATION DEFENSE



# XIAOYING PU

## Integrating visualization grammars with the task language of data analysts

Friday, July 1, 2022

2:00 – 4:00pm

[Virtual](#)

**ABSTRACT:** Creating visualizations is an integral part of data analysts' work. Visualization grammars, such as ggplot2 based on the Grammar of Graphics, provide elegant abstractions for visualization design. However, our understanding of how visualization grammars benefit analysts is limited. Theoretical benefits do not describe how data analysts interact with visualization grammars in practice since grammars support limited semantics (i.e., meanings) and do not consider the context of data analyses. Consequently, data analysts may have friction in executing their task language (e.g., probability distributions and data operations) in visualization grammars, or evaluating whether visualization outputs achieved their analytic goals. In this thesis, I explore integrating visualization grammars with analysts' task language to reduce and better understand the semantic distance between them. Based on the lessons from three projects, I discuss design opportunities for supporting analysts in executing and evaluating visual analyses, outlining the significance of visualization-analysis integration in visualization tooling.

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