Toward the Use of Immersive Technologies for Interactive Visualization

There has been a long history of humans collecting data going back thousands of years. As a society, we are projected to collect close to 200 zetabytes of data in 2025. A wide variety of technological marvels have been invented and developed to assist us in the collection and processing of those data. Computers have been a great tool for both collecting and processing data as it becomes obvious that the data collected is so large that processing it manually is impossible. Some of the data can be processed through conventional algorithms. Nowadays, AI-based approaches are used extensively for data processing as well. However, exploring data which encodes unknown features often require a more manual and hands-on approach with a human in the loop. This is where visualization becomes an invaluable tool to better understand data. There is a plethora of different visualization algorithms available, many of which highly benefit from an interactive approach where one can freely explore the data and drill down on specific features of interest. Immersive technologies are just the next step in interactive data visualization as it allows a user to literally walk through the data. Some immersive display systems provide a significantly higher resolution compared to desktop environments allowing one to explore data at a much higher level of detail. This presentation will provide an overview of some of the display environments we used for visualization purposes as well as the algorithms we developed to benefit from these display environments.