VIRTUAL REALITY + DATA VIZ

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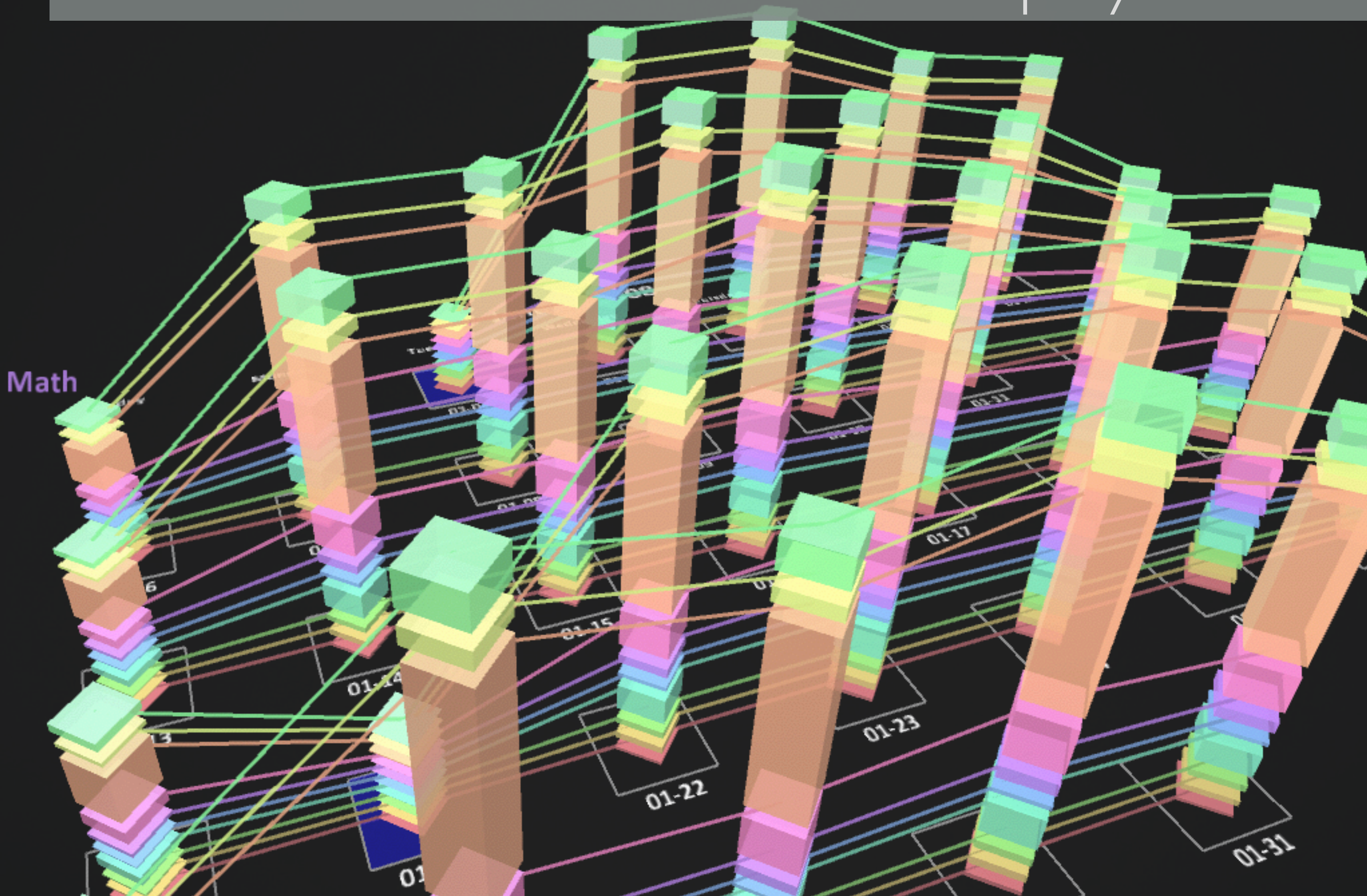
2D data visualization is limited by screen real estate

3D visualizations on 2D displays suck!



Virtual Reality is now inexpensive and accessible!

RELATED WORK

- CAVE displays [1]
  - Shown demonstrable improvement in data visualization tasks, especially with spatial and volumetric data
  - Are prohibitively expensive!

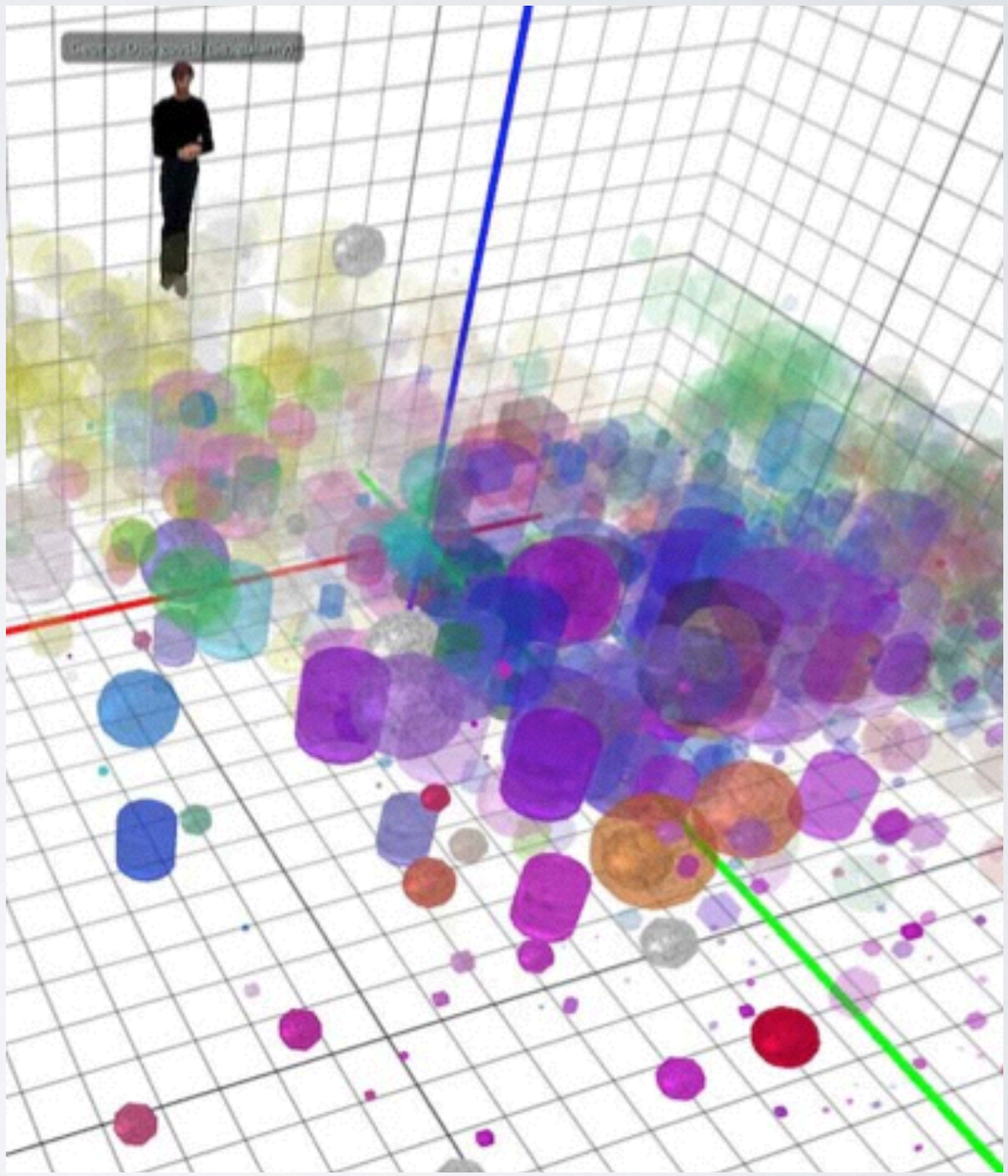
1. Cruz-Neira, et.al. Surround-screen projection-based virtual reality: The design and implementation of the cave. SIGGRAPH ’93

VR + VIZ

- Donalek et. al. [2] conduct closely related research

- Show benefits of VR

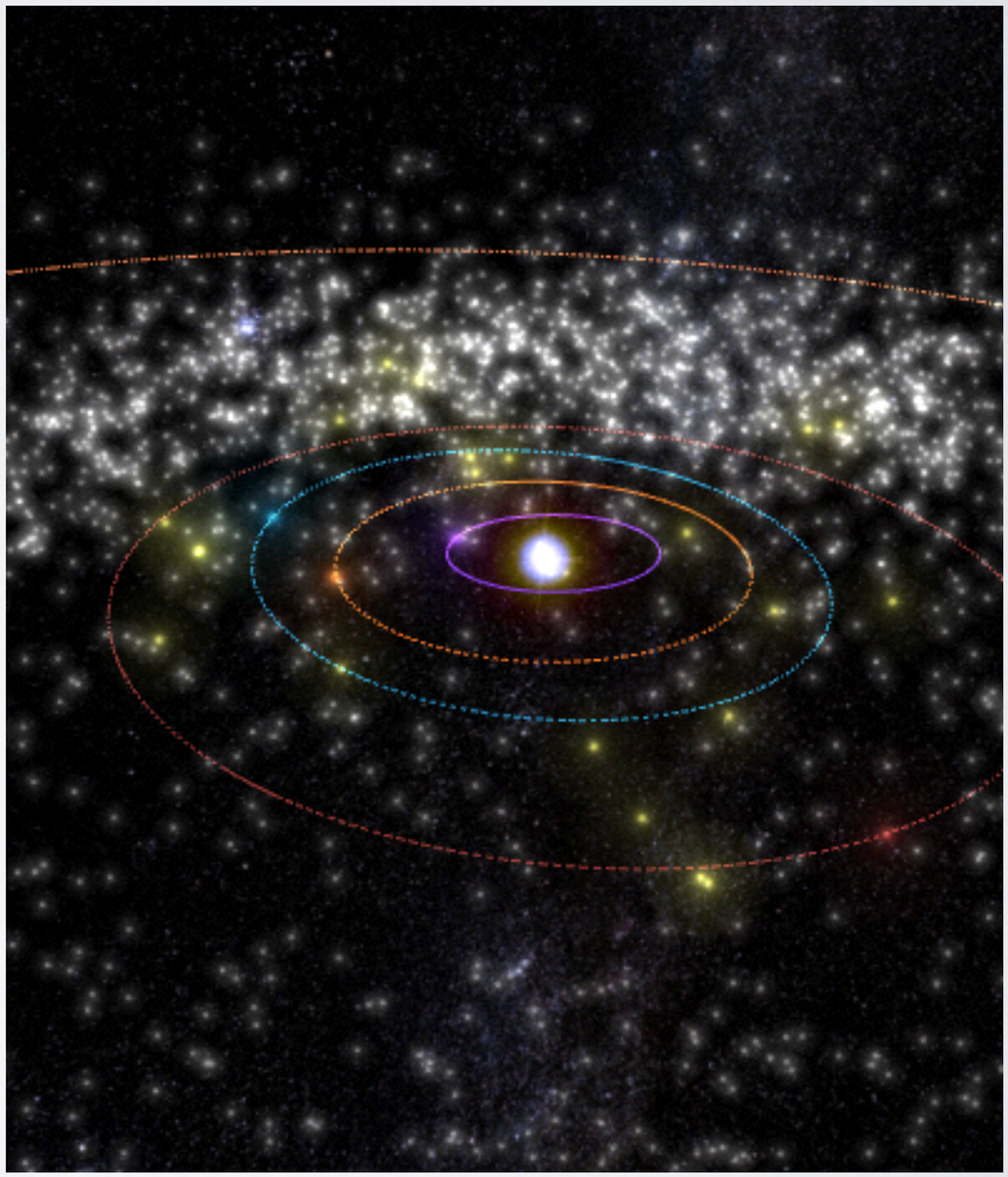
- Focus more on methods for down projecting high-dimensional "big data"

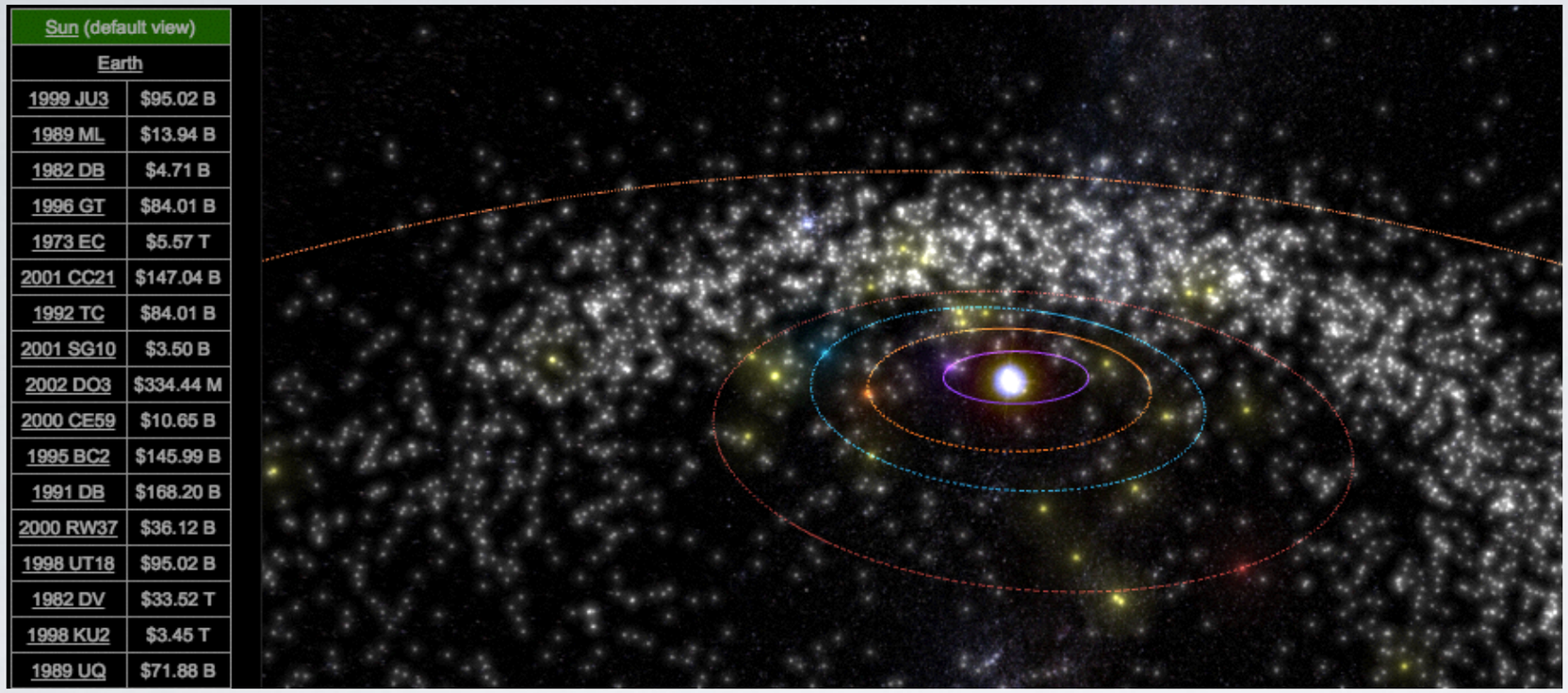


2. Donalek, C., et.al. Immersive and collaborative data visualization using virtual reality platforms. IEEE conf on Big Data

ASTERANK

- Catalog of 600,000 asteroids based on:
  - Name, Mass, Estimated Value
  - Data sourced from NASA JPL and others
  - 3D to 2D web interface with point and click controls





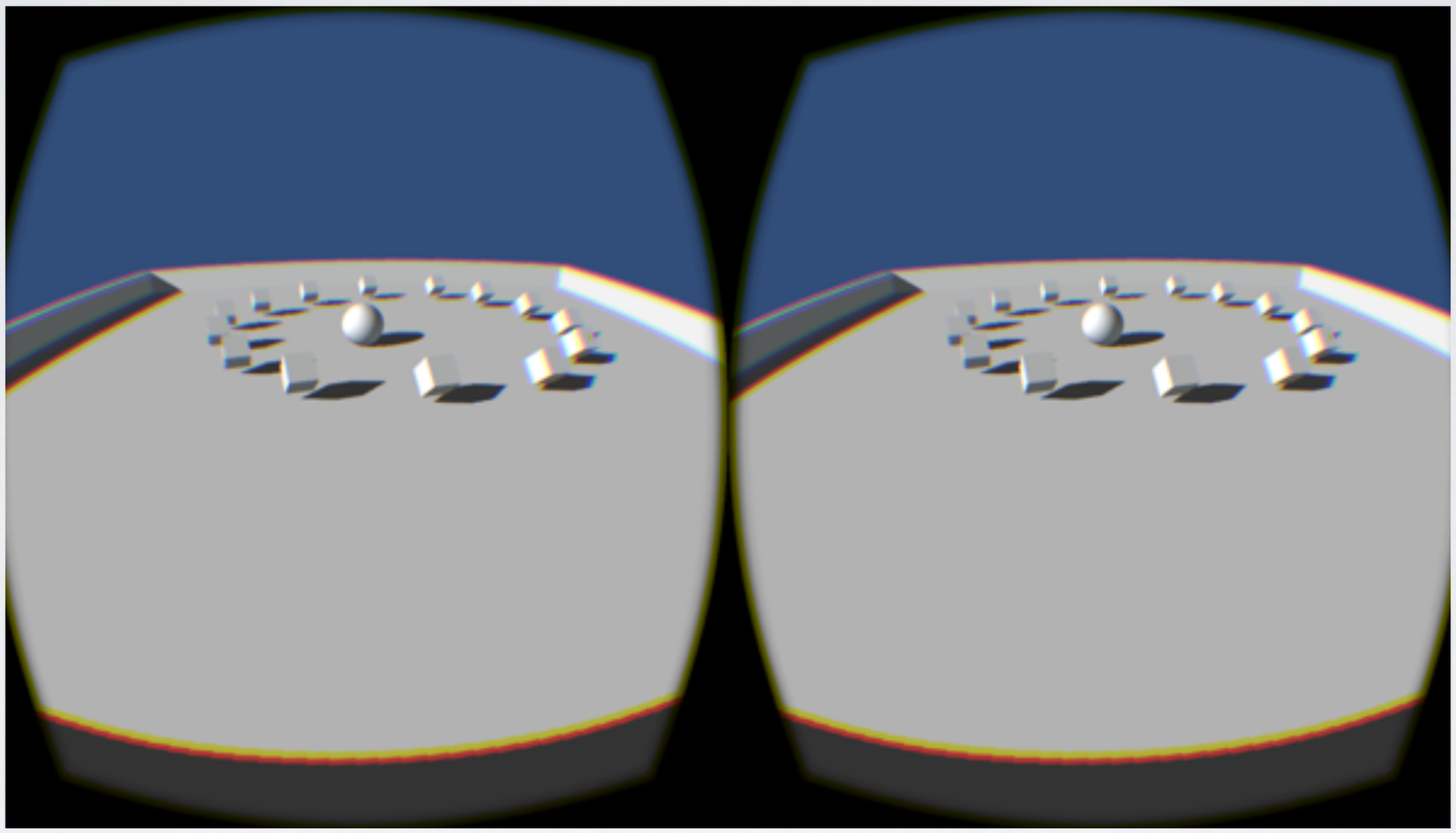
PROJECT PROPOSAL

Visualize and interact with asteroid data using Oculus Rift

INTERACTION

- Gaze to select & drill-down
- Focus + context using Lens
- Touch trackpad to translate / zoom

CURRENT PROGRESS



- Set up Oculus dev environment
- Built toy project in Unity
- Studied Asterank data format
- Able to hook into API

COMPLETION PLAN

- Currently working on solar system model in Unity
- Import asteroid data as particles in a physics simulation (gravity field, initial position, velocity)
- Implement and evaluate interaction techniques

FEEDBACK

- Other interaction techniques to explore?
- How can VR benefit abstract data viz?
- General comments; how else can VR be useful in Data Viz?