EVERY PERSON IN THIS ROOM HAS CO-AUTHORED A PAPER WITH 2 OTHER PEOPLE HERE
THE VIS COMMUNITY IS A HIGHLY CONNECTED MULTIVARIATE GRAPH
ME

MY ADVISOR
GRAPH TASKS

- Finding a node of interest
- Finding connected nodes
- Finding nodes with specific attribute values

QUERY BASED
TOPOLOGY BASED
ATTRIBUTE BASED
THE CHALLENGE

SUPPORTING TOPOLOGY AND ATTRIBUTE BASED TASKS EQUALLY WELL
EXISTING MULTIVARIATE GRAPH VISUALIZATION TECHNIQUES

- Matrices
- On-Node Encoding
- Small Multiples
- Multiple Coordinated Views
- Layout Adaption
EXISTING MULTIVARIATE GRAPH VISUALIZATION TECHNIQUES

On-Node Encoding

EXISTING MULTIVARIATE GRAPH VISUALIZATION TECHNIQUES

EXISTING MULTIVARIATE GRAPH VISUALIZATION TECHNIQUES

Select Subgraph

Extract a spanning tree

Root
Previous Spanning Tree based Approaches

[Munzner, H3Viewer, 1998]  [Lee et al., TreePlus, 2006]
Extract a spanning tree

Root

Linearize

Add Attributes
APPLYING THE SPANNING TREE AND LINEARIZATION TECHNIQUES TO A MULTIVARIATE GRAPH
SUPPORT TOPOLOGY AND ATTRIBUTE TASKS
Juniper

TreePlus: Interactive Exploration of Networks with Enhanced Tree Layout

- Bongshin Lee
- Catherine Plaisant
  - Jean-Daniel Fekete
  - Ben Shneiderman
  - Petra Isenberg
  - Nathalie Henry Riche
  - Heidi Lern
- Benjamin B. Bederson
- Christopher Kotfila
- Cynthia Sims Parr
- Vladislav Daniel Veksler
- Wayne D. Gray

Spanning Tree

DOI aggregation

Aggregate Papers

DOI Definition

Table

Adjacency Matrix

Attribute Table
## Juniper

TreePlus: Interactive Exploration of Networks with Enhanced Tree Layout

**Aggregate Papers**

- Bongshin Lee
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- Benjamin B. Bederson
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### DOI aggregation

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Juniper

TreePlus: Interactive Exploration of Networks with Enhanced Tree Layou

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Vladislav Daniel Veksler

Wayne D. Gray

Aggregate Papers

DOI Definition

ATTRIBUTE TABLE
The image contains a diagram of a graph and its corresponding adjacency matrix. The graph consists of vertices labeled A, B, C, D, E, and G. The edges connecting these vertices are shown with dotted lines.

The adjacency matrix is presented in a grid format, with rows and columns labeled by the vertices. The values in the matrix indicate whether an edge exists between two vertices. For example, a value of 1 indicates an edge exists, while a value of 0 indicates no edge.

The attribute table is not shown in the image, but it would typically be used to store additional information about each vertex or edge.
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Query for Node

QUERY TASK
TreePlus: Interactive Exploration of Networks with Enhanced Tree Layou
Gather Children

TOPOLOGY TASK
TreePlus: Interactive Exploration of Networks with Enhanced Tree Layou

- CTArcade: learning computational thinking while tr
- Deploying mon tran widgets in the wild.
- Human computation: a survey and taxonomy of a grow
- MonoTrans2: a new human computation system to supp
- Web workers unite! addressing challenges of online
- Mobile technologies for the world’s children.
- CHI policy issues around the world.
- One-handed touchscreen input for legacy applicatio
- Readability of scanned books in digital libraries.

Group by Distance to Root

TOPOLOGY TASK
Aggregate by Type

ATTRIBUTE + TOPOLOGY TASK
Aggregate by Type

ATTRIBUTE + TOPOLOGY TASK
Aggregate by Type

ATTRIBUTE + TOPOLOGY TASK
Re-Root Tree

TOPOLOGY TASK

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Vladislav Daniel Veksler
Degree of Interest based Aggregation

ATTRIBUTE + TOPOLOGY TASK
Shortest Path

TOPOLOGY TASK
THE CHALLENGE

SUPPORTING TOPOLOGY AND ATTRIBUTE BASED TASKS EQUALLY WELL
APPLYING THE SPANNING TREE AND LINEARIZATION TECHNIQUES TO A MULTIVARIATE GRAPH

SUPPORT TOPOLOGY AND ATTRIBUTE TASKS
FUTURE WORK

▸ Techniques for connecting to off-screen nodes
▸ Support for rich edge attributes
▸ Potential for interleaving cells in attribute table for graphs with different node types