

# InfoVis Group Research

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<http://www.cs.ubc.ca/~tmm/talks.html#hci13>

# People

- on sabbatical, small group!
- Matt Brehmer
  - continues PhD
- Jessica Dawson
  - defends MSc end of Oct
- Stephen Ingram
  - defends PhD Friday
  - then postdoc

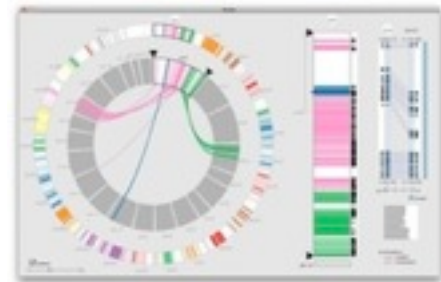
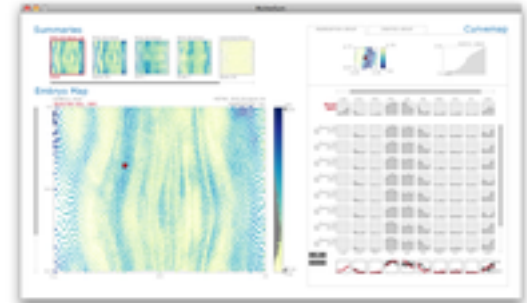
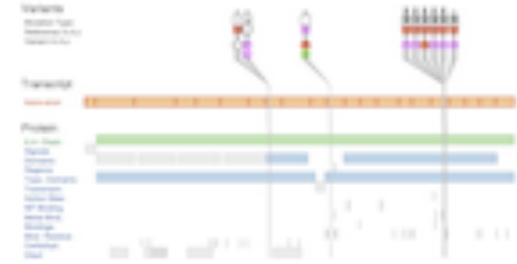


# Many Flavors of Work

- Problem-driven work
  - design studies
- Technique-driven work
  - algorithms, systems
- Evaluation
  - lab/field/data studies
- Theoretical foundations
  - models

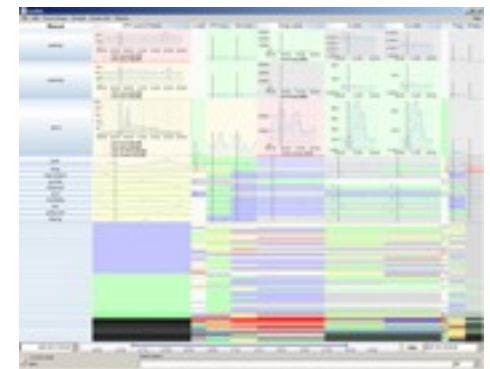
# Design Studies: Biology Domain

- Variant View: gene sequence variants
- MulteeSum, Pathline: comparative functional genomics
- MizBee: comparative genomics (synteny)
- Cerebral: gene expression + interaction network



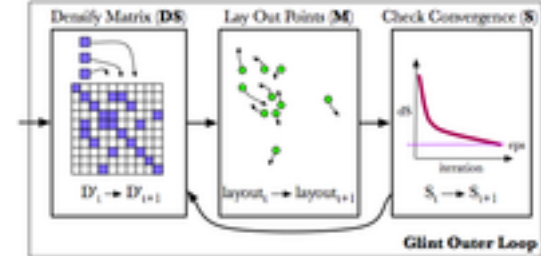
# Design Studies: Other Domains

- RelEx: automative networks
- Vismon: fisheries simulation/mgmt
- LiveRAC: large-scale system monitoring
- SessionViewer: web logs

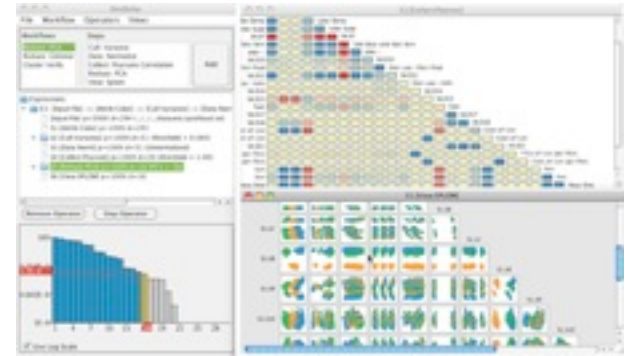


# Techniques: Dimensionality Reduction

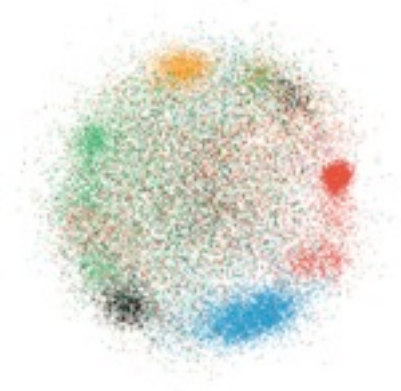
- Glint: costly distance functions



- DimStiller: visual dimensional analysis and reduction toolkit

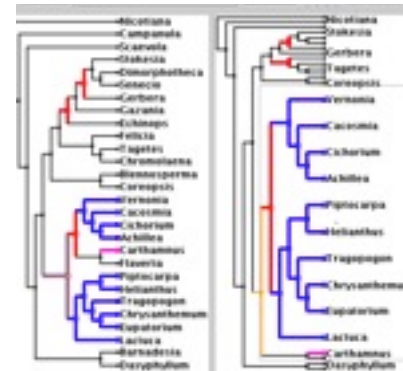
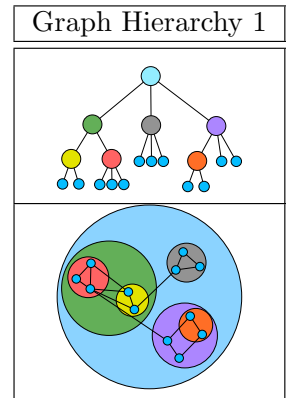
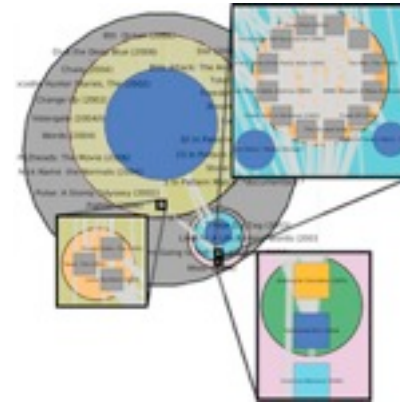
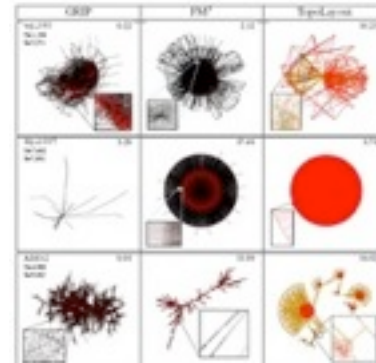


- Glimmer: GPU accelerated MDS



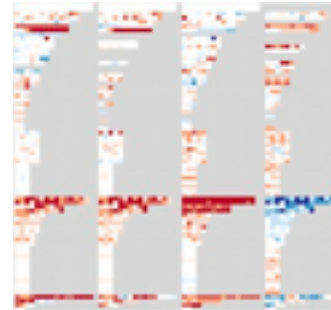
# Techniques: Graphs/Trees

- general multilevel/compound graphs
  - layout
    - TopoLayout
  - interaction
    - Grouse
    - GrouseFlocks
    - TugGraph
- evolutionary tree comparison
  - TreeJuxtaposer

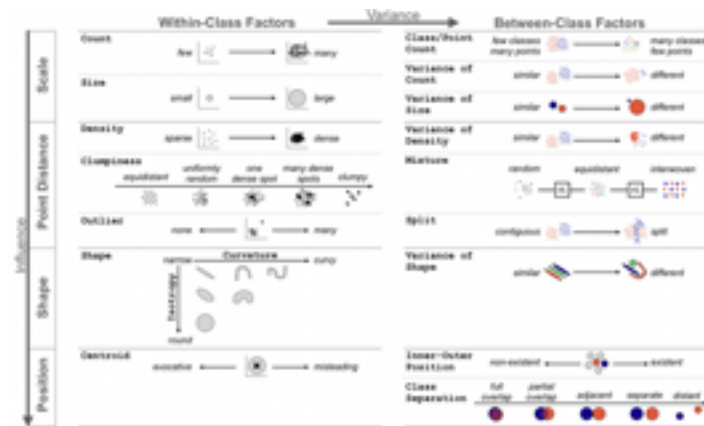


# Evaluation: Dimensionality Reduction

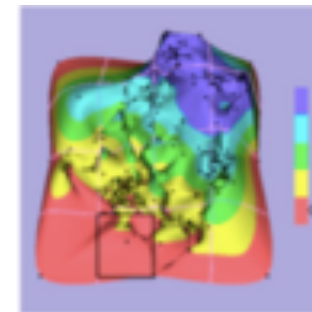
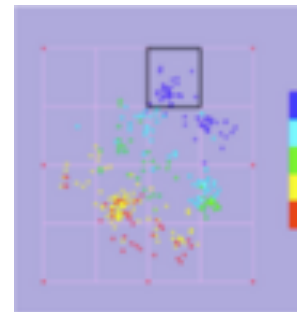
- guidance on scatterplot/DR choices



- taxonomy of cluster separation factors



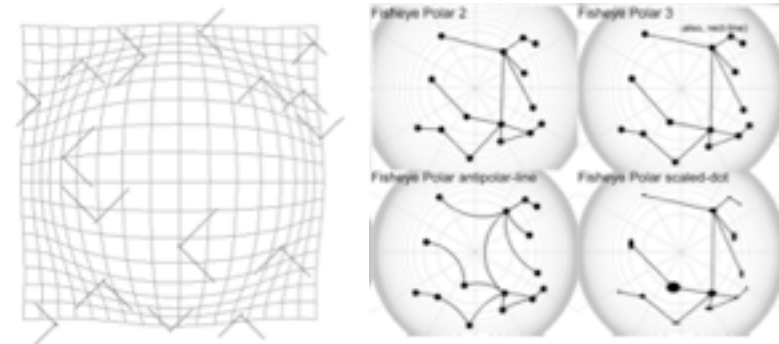
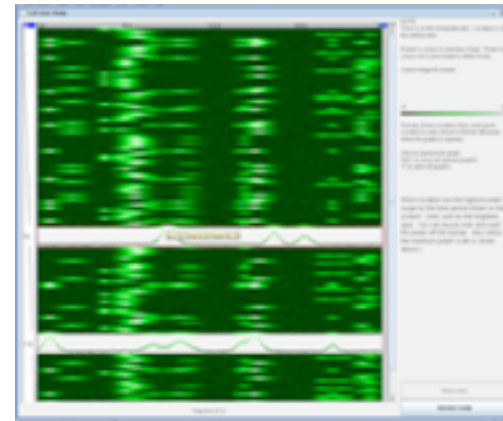
- 2D points vs 3D landscapes





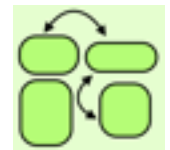
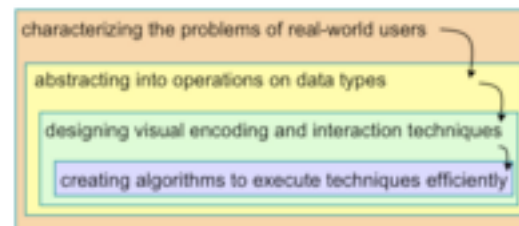
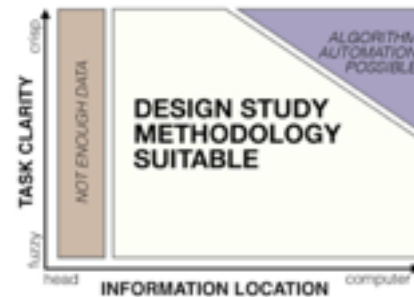
# Evaluation: Focus+Context

- overviews: separate vs. integrated views
- navigation: stretch and squish vs. pan/zoom navigation
- impact of distortion on visual search, visual memory



# Theory/Models

- multi-level typology of abstract visualization tasks
- design study methodology
- nested model for vis design and validation
  - revisited: blocks and guidelines
- papers process and pitfalls



- Type Pitfalls
  - Design in Technician's Clothing
  - Application Bingo versus Design Study
  - All That Coding Means I Deserve A Systems Paper
  - Neither Fish Nor Food!
- Visual Encoding Pitfalls
  - Unjustified Visual Encoding
  - Hammer In Search Of Nail
  - 2D Good, 3D Better
  - Color Cacophony
- Results Pitfalls
  - Unfiltered By Time
  - Fear and Loathing of Complexity
  - Square Mat Comparison
  - Tiny Toy Datasets
  - But My Friends Liked It!
  - Unjustified Tasks
- Writing Style Pitfalls
  - Deathly Detail Dump