

Problem-driven work

- design studies
 - in collaboration with target users
 - real data, real tasks
 - intensive requirements analysis
 - iterative refinement
 - deploy tools/systems
 - typical evaluation: field studies
- my strategy: opportunistic collaboration
 - many domains
 - both industrial and academic partners

Problem-driven: Tech industry

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Heidi Lam



Diane Tang
(Google)



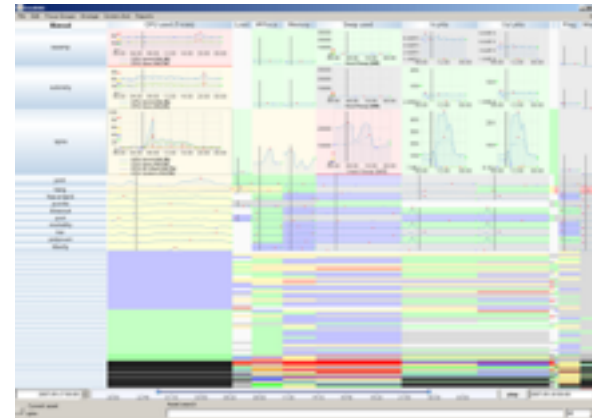
SessionViewer: web log analysis

<https://youtu.be/T4MaTZd56G4>

Peter McLachlan



Stephen North
(AT&T Research)



LiveRAC: systems time-series logs

<https://youtu.be/ld0c3H0VSkw>

Problem-driven: Energy, sustainability

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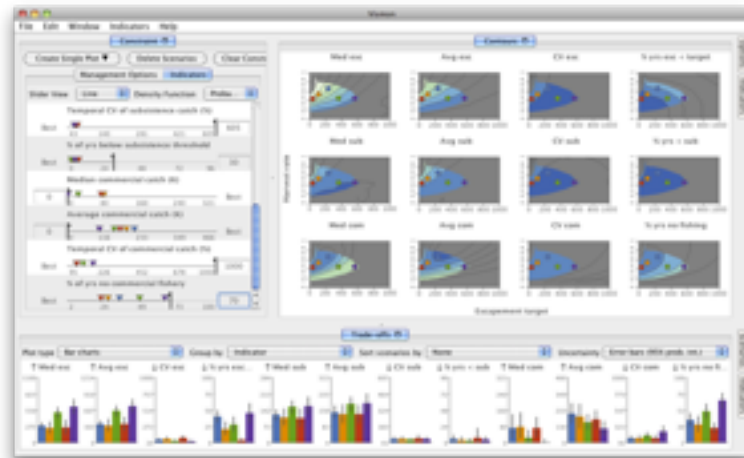


Energy Manager

Matt Brehmer



**Kevin Tate
(Pulse/EnerNOC)**



Vismon

<https://youtu.be/h0kHoS4VYmk>

Maryam Booshehrian



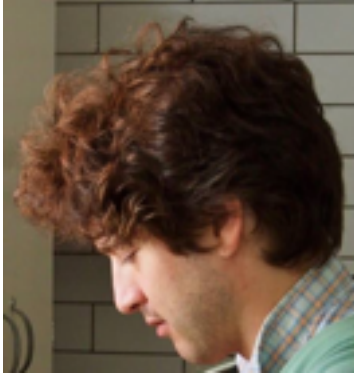
Torsten Moeller (SFU)



Problem-driven: Genomics

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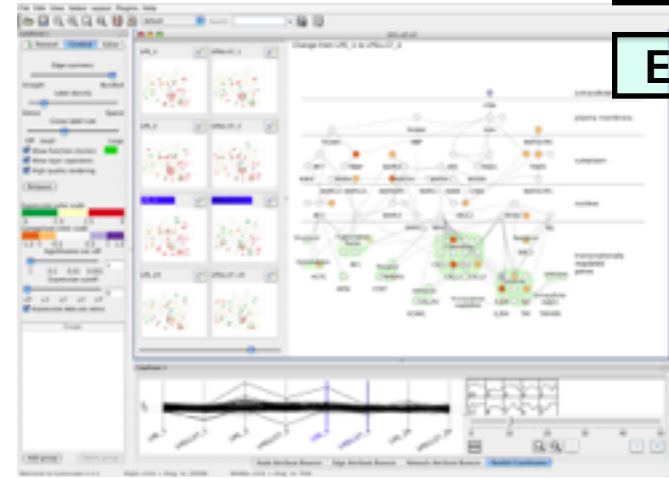
Aaron Barsky



Jenn Gardy
(UBC Micro)



Robert Kincaid
(Agilent)

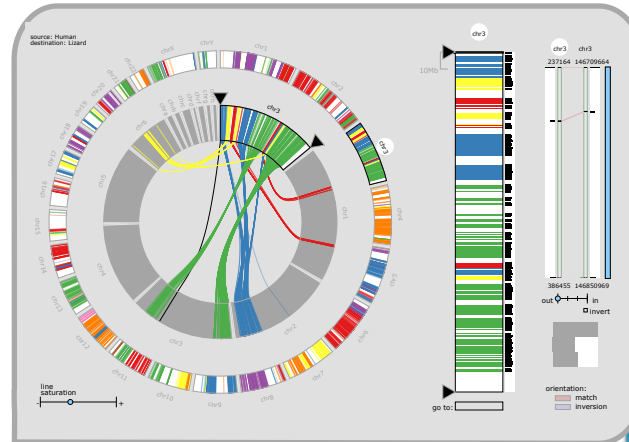


Cerebral
<https://youtu.be/76HhG1FQngI>

Miriah Meyer

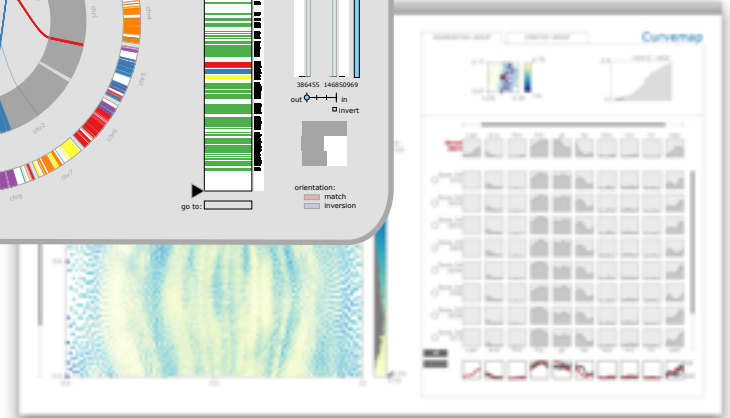


Hanspeter Pfister
(Harvard)



MizBee

<https://youtu.be/86p7brwuz2g>



MulteeSum, Pathline

Problem-driven: Genomics, journalism

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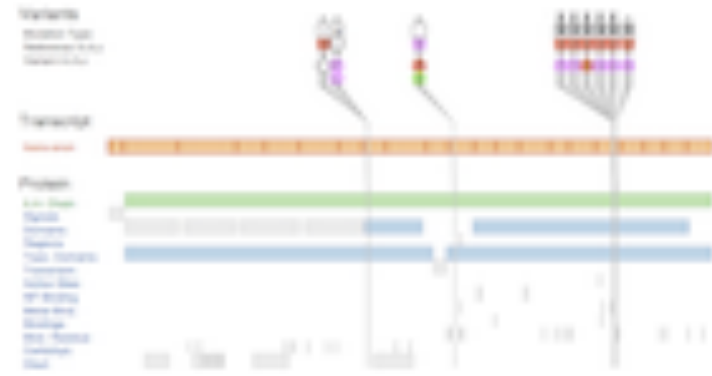
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Joel Ferstay



Cydney Nielsen
(BC Cancer)



Variant View

https://youtu.be/AHDnv_qMXxQ

Jonathan Stray
(Assoc Press)



Overview

<https://vimeo.com/71483614>

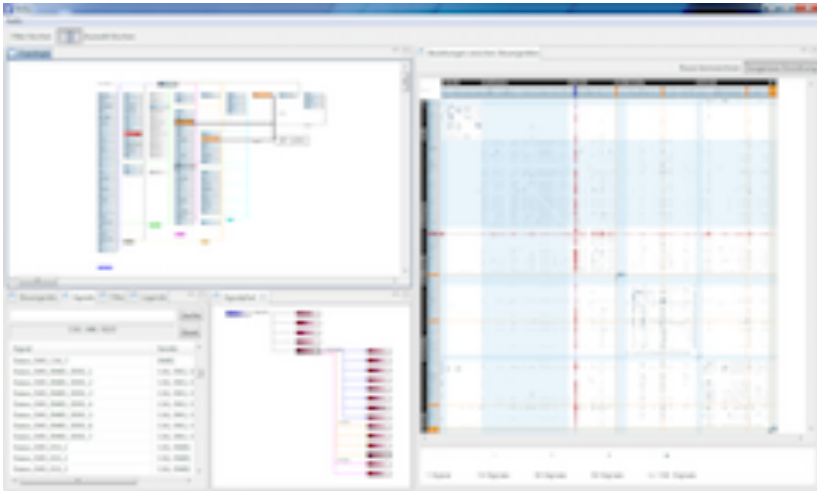
Problem-driven: Autos, e-commerce

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Michael Sedlmair



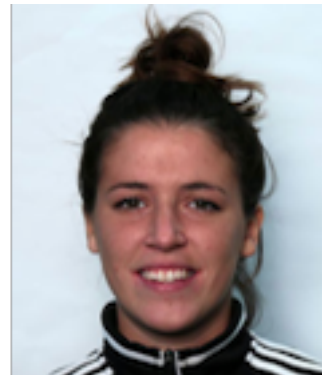
RelEx (BMW)

<https://youtu.be/89lsQXc6Ao4>

current work:

Mobify clickstream collaboration

Kimberly Dextras-Romagnino



Technique-driven work

- **scalable algorithms & systems**
 - typical evaluation: computational benchmarks
- **new layout & interaction techniques**
 - typical evaluation: controlled experiments on human subjects

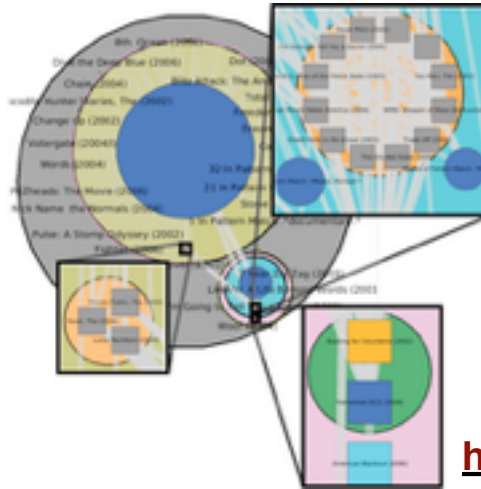
Technique-driven: Graph drawing

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Daniel Archambault



David Auber
(Bordeaux)



TopoLayout
SPF
Grouse
GrouseFlocks
TugGraph

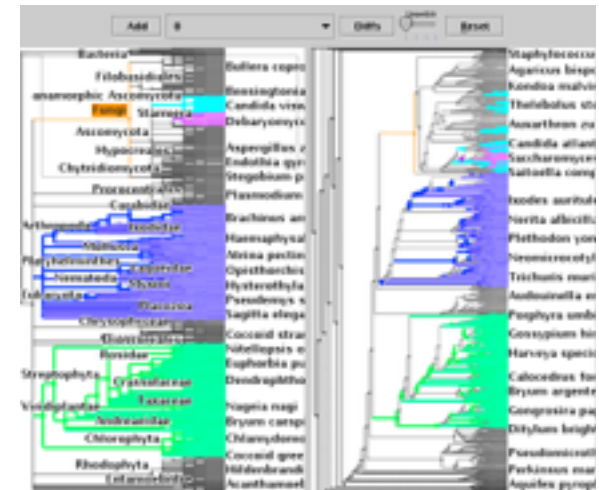
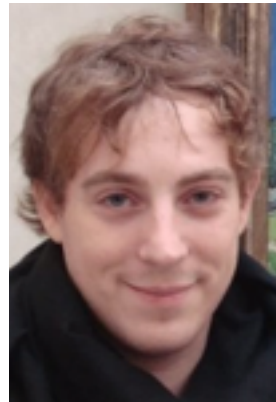
<https://youtu.be/AWXAe8zvkt8>



Detangler

<https://youtu.be/QOtnHSsUV6k>

Benjamin Renoust



TreeJuxtaposer

<https://youtu.be/GdaPj8a9QEO>

Guy Melançon
(Bordeaux)

Evaluation experiments: Graph drawing

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Dmitry Nekrasovski Adam Bodnar



Joanna McGrenere



Stretch and squish navigation

Jessica Dawson



Joanna McGrenere



Search set model of path tracing

Technique: Dimensionality reduction

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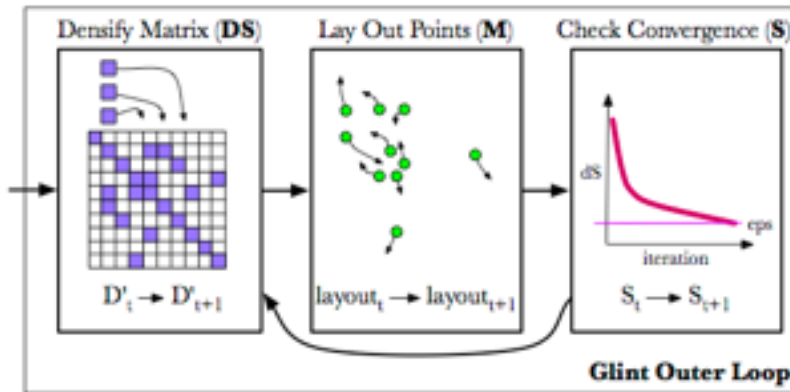
Stephen Ingram



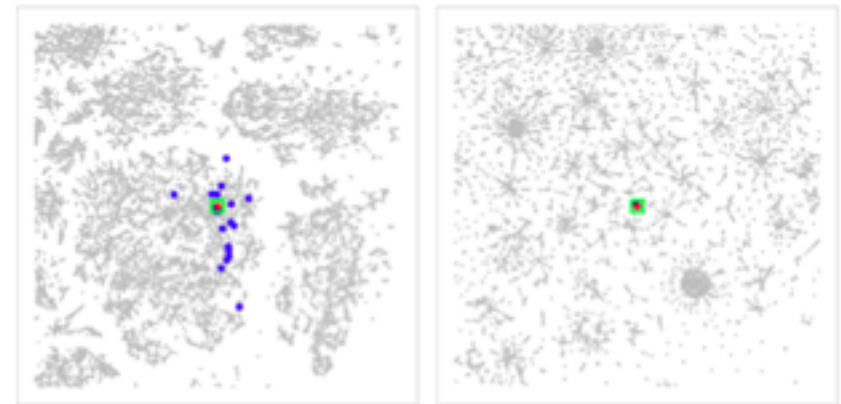
Glimmer



DimStiller



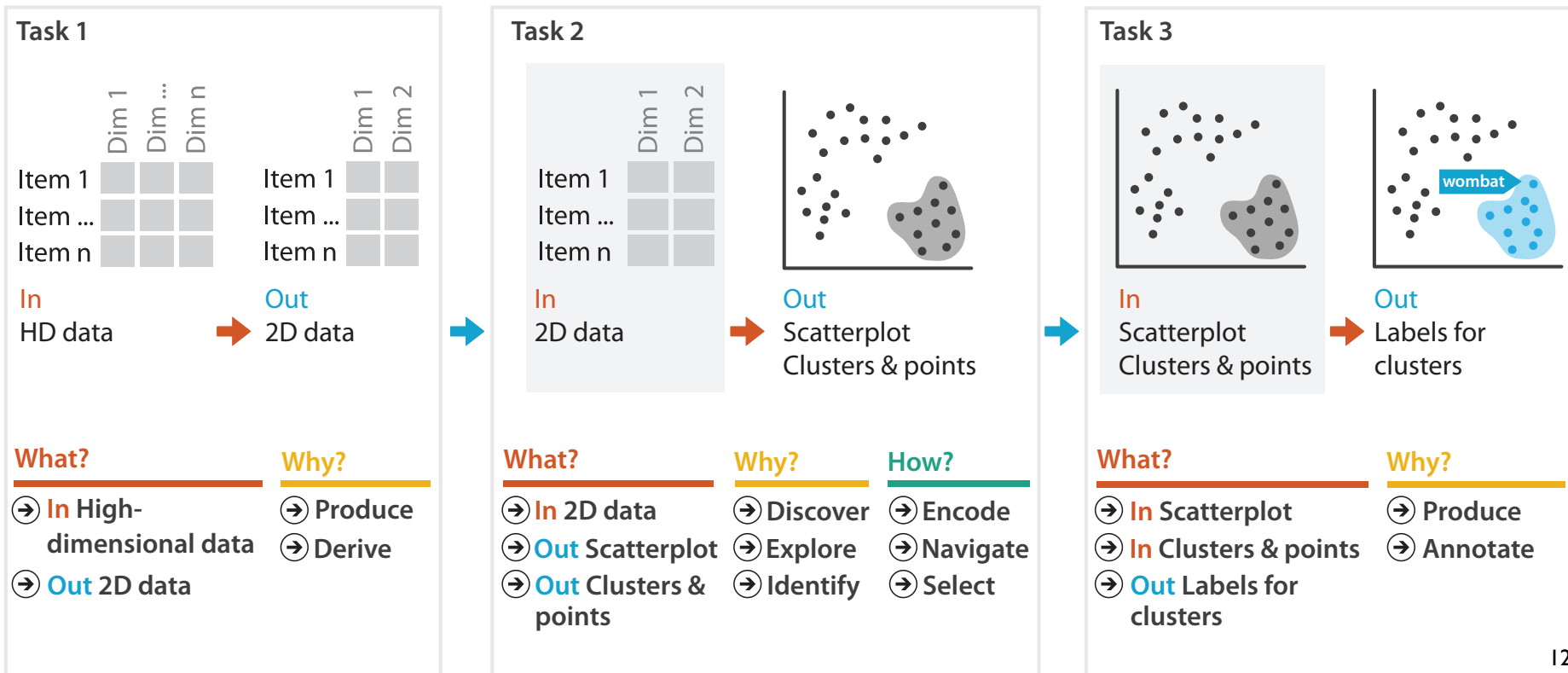
Glint



QSN

Dimensionality reduction for documents

- derive low-dimensional target space from high-dimensional measured space



Evaluation experiments: Dim. reduction

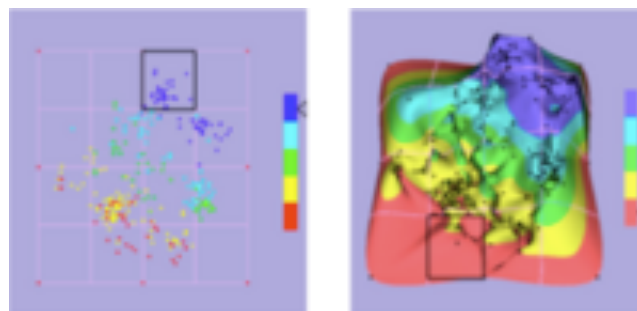
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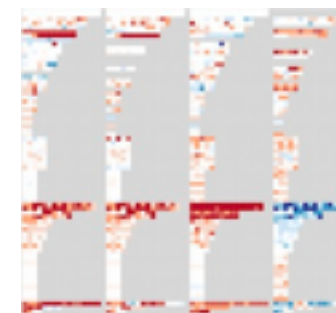
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Melanie Tory



Points vs landscapes for dimensionally reduced data

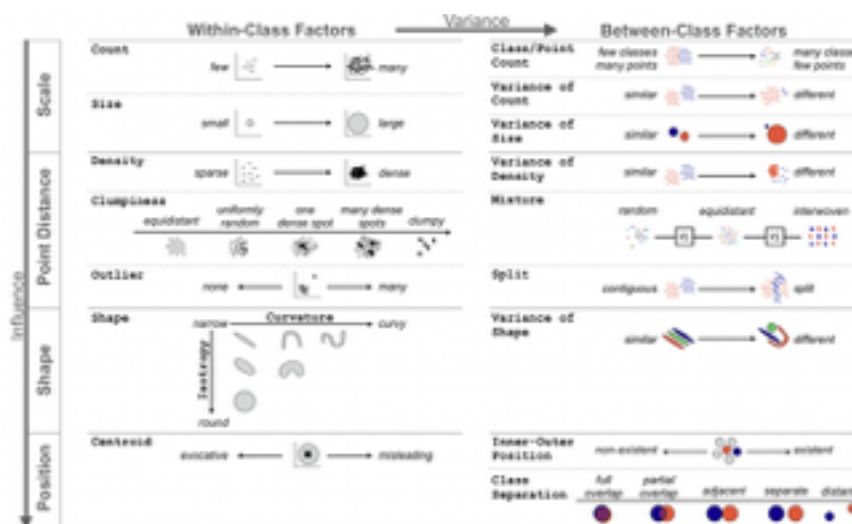


Guidance on DR & scatterplot choices

Michael Sedlmair



Melanie Tory



Taxonomy of cluster separation factors

Evaluation in the field: Dim. reduction

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DR in the Wild

Matt Brehmer

Michael Sedlmair

Melanie Tory

Stephen Ingram



Curation & Presentation: Timelines

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TimeLineCurator

<https://vimeo.com/123246662>

Johanna Fulda
(Sud. Zeitung)



Matt Brehmer



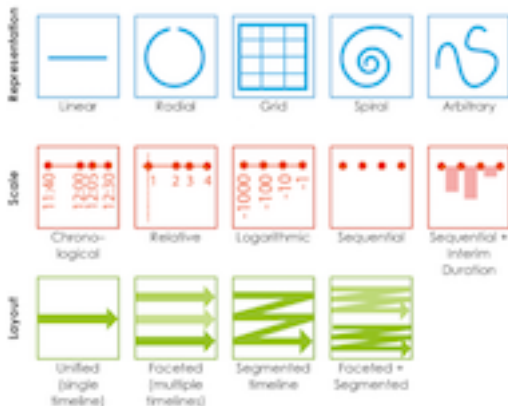
Bongshin Lee
(Microsoft)



Benjamin Bach
(Microsoft)



Nathalie Henry-Riche
(Microsoft)



Timelines Revisited

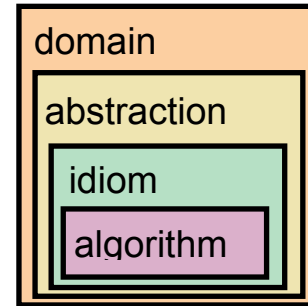
timelinesrevisited.github.io/

Theoretical foundations

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

Papers Process & Pitfalls

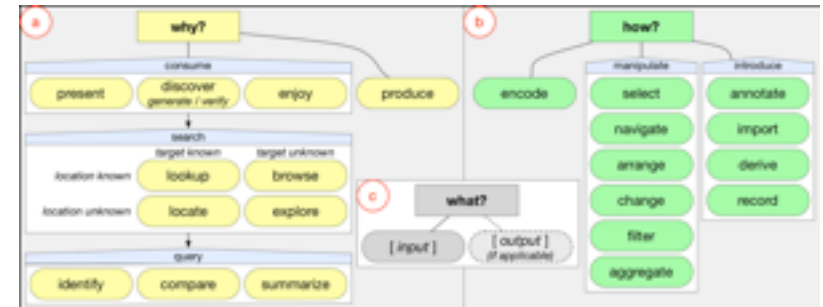


Nested Model



Design Study Methodology

Michael Sedlmair Miriah Meyer



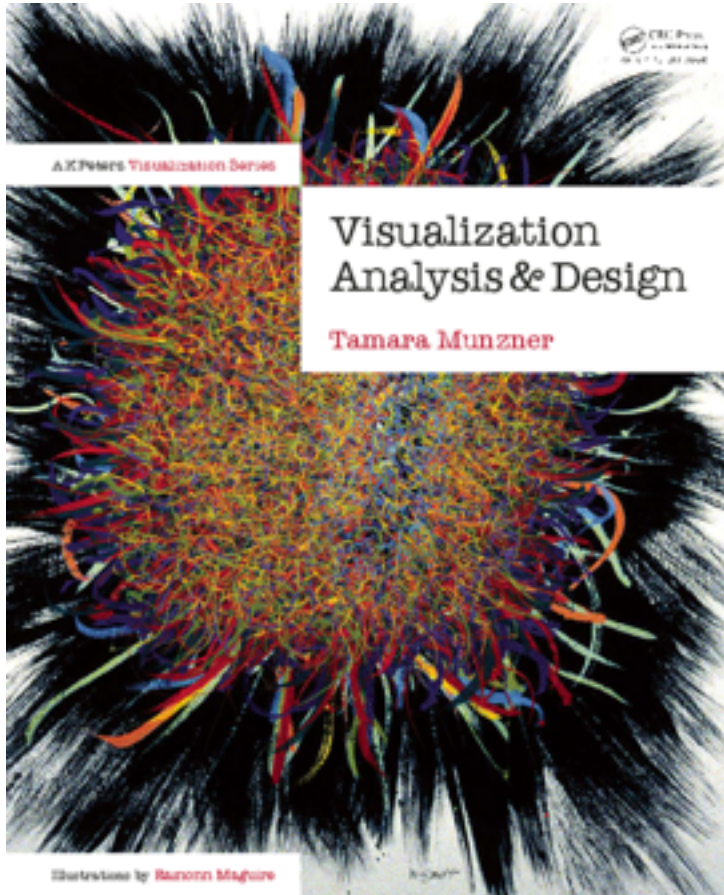
Abstract Tasks

Matt Brehmer



Theoretical foundations

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Visualization Analysis & Design

Research agenda: interleaved angles of attack

