

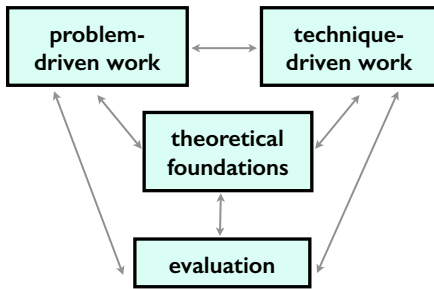
# InfoVis Group Research

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University of British Columbia

Huawei Burnaby  
8 Feb 2018  
[www.cs.ubc.ca/~tmm/talks.htm#huawei18](http://www.cs.ubc.ca/~tmm/talks.htm#huawei18)

@tamaramunzner

## Research agenda: interleaved angles of attack



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## Problem-driven: design studies

- 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

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## Problem-driven: Tech industry

Heidi Lam  
Diane Tang (Google)

Stephen North (AT&T Research)

Peter McLachlan

SessionViewer: web log analysis  
<https://youtu.be/T4MaTz458G4>

LiveRAC: systems time-series logs  
<https://youtu.be/l0c3H0VSkw>

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## Problem-driven: Genomics

Aaron Barsky  
Jenn Gardy (UBC Micro)  
Robert Kincaid (Agilent)

Miriam Meyer

Hanspeter Pfister (Harvard)

MixBee

Cerebral  
<https://youtu.be/76HhG1EQng>

MulteeSum, Pathline

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## Problem-driven: Genomics

Joel Restay  
Cydney Nielsen (BC Cancer)

Variant View  
[https://youtu.be/AH0nv\\_aMXxQ](https://youtu.be/AH0nv_aMXxQ)

Ana Crisan  
Jenn Gardy (UBC Public Health & BC CDC)

current work: genomic epidemiology

Zipeng Liu  
current work: gene trees (UBC Zoology)

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## Problem-driven: Automotive, journalism

Michael Sedlmair

ReEx (BMW)  
<https://youtu.be/89IsQXc6A04>

Jonathan Stray (Assoc Press)

Overview  
<https://vimeo.com/71483614>

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## Problem-driven: Sustainable buildings, fisheries

Matt Brehmer  
Kevin Tate (Pulse/EnerNOC)

Energy Manager

Maryam Booshehrian  
Torsten Moeller (SFU)

Vismon  
<https://youtu.be/h0kHoS4VYrk>

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## Problem-driven: Current data science

Kimberly Dextras-Romagnino  
current work: Segmentifier (Mobify)  
e-commerce clickstreams  
build tools for human-in-the-loop visual data analysis

Michael Oppermann  
current work: Ocupado (Sensible Building Science)  
wifi proxy for real-time building occupancy  
integrate visual analytics and predictive ML for facilities management

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## Technique-driven work

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

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## Technique-driven: Graph drawing

Daniel Archambault  
David Auber (Bordeaux)

TopoLayout  
SFPG  
Grouse  
GrouseFlocks  
TugGraph  
<https://youtu.be/AVWXe8zvk8>

Benjamin Renoust  
Guy Melançon (Bordeaux)

TreeJuxtaposer  
<https://youtu.be/Gd8P8a90Fo>

Detangler  
<https://youtu.be/QOmHS8aUYsk>

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## Evaluation experiments: Graph drawing

Dmitry Nekrasovski  
Adam Bodnar  
Joanna McGrenere

Stretch and squish navigation

Jessica Dawson  
Joanna McGrenere

Search set model of path tracing

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## Technique: Dimensionality reduction

Stephen Ingram

Glimmer

DimStiller

QSNE

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## Evaluation experiments: Dim. reduction

Melanie Tory

Points vs landscapes for dimensionally reduced data

Guidance on DR & scatterplot choices

Michael Sedlmair  
Melanie Tory

Taxonomy of cluster separation factors

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## Evaluation in the field: Dim. reduction

DR in the Wild

Matt Brehmer  
Michael Sedlmair  
Melanie Tory  
Stephen Ingram

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## Curator & Presentation: Timelines

Johanna Fulda (Sud. Zeitung)

Matt Brehmer

Timeline Curator  
<https://vimeo.com/123246682>

Bongshin Lee (Microsoft)  
Benjamin Bach (Microsoft)  
Nathalie Henry-Riche (Microsoft)

Timelines Revisited  
[timelinesrevisited.github.io/](https://timelinesrevisited.github.io/)

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# Theoretical foundations

T F P  
E

- **Typical Models**
  - Behavioral/Contextual
  - Cognitive/Behavioral/Contextual
  - Cognitive/Behavioral/Contextual/Emotional/Physical
- **Behavioral/Contextual**
  - Behavior
  - Context
  - Behavior/Context
- **Cognitive/Behavioral/Contextual**
  - Cognition
  - Behavior
  - Context
  - Cognition/Behavior/Context
- **Cognitive/Behavioral/Contextual/Emotional/Physical**
  - Cognition
  - Behavior
  - Context
  - Emotion
  - Physical
  - Cognition/Behavior/Context/Emotion/Physical



Nested Model



Abstract Tasks

Matt Brehmer



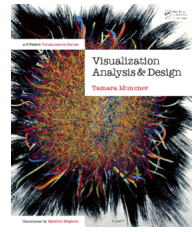
## Design Study Methodology



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# Theoretical foundations

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Visualization Analysis & Design

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# More information

- papers, videos, open source software, talks, courses
- <http://www.cs.ubc.ca/group/infovis>
- <http://www.cs.ubc.ca/~tmm>

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