

Stan Nowak PhD

Visualization Design and User Research
Avalanche Canada

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I am a visualization and human-computer interaction (HCI) researcher. I am interested in using visualization to support complex sensemaking and risk-based decision-making, particularly under circumstances of ambiguity. I design, implement, and evaluate interactive visualization systems for solving real-world problems.

RESEARCH INTERESTS: Visual Analytics, Sensemaking, Human-Computer Interaction, Information Visualization

EDUCATION

PhD 2017 - 2023

Simon Fraser University Surrey, BC
SUPERVISION: Lyn Bartram, Pascal Haegeli and Wolfgang Stuerzlinger
THESIS: Visual Analytics to Support Complex Sensemaking under Ambiguity

Bachelor of Arts in Cognitive Systems: Cognition and The Brain 2009 - 2014

University of British Columbia Vancouver, BC

EXPERIENCE

Visualization Design & User Research Specialist 2023 -

Avalanche Canada Remote / Revelstoke, Canada
Designing, developing, and evaluating visualization systems for avalanche professionals and public recreationists.

Graduate Research Assistant 2017 - 2023

Vancouver Institute for Visual Analytics Burnaby, Canada
SUPERVISION: Lyn Bartram
Designing and developing interactive visualizations for internal and external clients including but not limited to Avalanche Canada, BC Cancer Research Centre, and SFU internal departments. Developing and delivering courses on visualization. (*D3.js, Tableau, Python*)

PhD Research Intern 2022

Autodesk Toronto, Canada
SUPERVISION: Justin Matejka, Bon Adriel Aseniero, Tovi Grossman, Lyn Bartram, George Fitzmaurice
Explored the intersection of visual analytics and architectural CAD software through three qualitative studies. (*paper.js*)

Graduate Research Assistant 2019 - 2020

SFU Avalanche Research Program Burnaby, Canada
SUPERVISION: Pascal Haegeli & Lyn Bartram
Conducted human-centered research to understand the work of public avalanche forecasters to inform the design of visual analytics tools. Developed visualization tools to aid exploratory analysis of physical snowpack models. (*D3.js, Tableau, Svelte*)

Visualization Consulting 2016 - 2017

Self-employed Vancouver, Canada
Provided analytics and visualization support for clients in business intelligence, data journalism, and retail supply-chain management and distribution. (*D3.js, Tableau, Python*)

Visualization Instructor and Consultant 2015 - 2017

Vancouver Institute for Visual Analytics Burnaby, Canada
Provided visual analytics training for academics and professionals and analytics consulting for industry clients. (*D3.js, Tableau, Python*)

Cofounder 2014 - 2017

BuckMeUp.com Vancouver, Canada

Designed and developed front-end and business development of a freelance marketplace website. (*AngularJS*)

Undergraduate Research Assistant

2014 - 2016

UBC Communication Dynamics Laboratory Vancouver, Canada

SUPERVISION: Eric Vatikiotis-Bateson

Developed software for experiments investigating audio-visual illusions. (*Python, Blender*)

Undergraduate Research Assistant

2014

UBC Visual Cognition Laboratory Vancouver, Canada

SUPERVISION: Ron Rensink

Developed software for experiments investigating the effects of stress on visual cognition. (*Matlab*)

Undergraduate Volunteer

2013

UBC Visual Cognition Laboratory Vancouver, Canada

SUPERVISION: Graham Healy & Ron Rensink

Designed and conducted experimental research investigating the effects of neurofeedback-training on video game performance. (*Matlab, Python*)

Communication Dynamics Laboratory – Directed Studies Student

2012

UBC Communication Dynamics Laboratory Vancouver, Canada

SUPERVISION: Eric Vatikiotis-Bateson & Osman Ipsiroglu

Investigated the use of non-invasive crude motion-detection from 2D video used in monitoring and treatment of children with sleep-disorders. (*Matlab*)

PUBLICATIONS

Archival Conference Proceedings (refereed)

- C5. **Stan Nowak**, Lyn Bartram (2023). Designing for Ambiguity in Visual Analytics: Lessons from Risk Assessment and Prediction. In *IEEE Transactions on Visualization and Computer Graphics*.
- C4. **Stan Nowak**, Lyn Bartram (2022). I'm Not Sure: Designing for Ambiguity in Visual Analytics. In *Graphics Interface*.
- C3. **Stan Nowak**, Lyn Bartram, & Pascal Haegeli (2020). Designing for Ambiguity: Visual Analytics in Avalanche Forecasting. In *IEEE Visualization Conference*.
- C2. **Stan Nowak**, Lyn Bartram, & Thecla Schiphorst (2018). A Micro-Phenomenological Lens for Evaluating Narrative Visualization. In *IEEE Evaluation and Beyond-Methodological Approaches for Visualization*.
- C1. Horton, Simon, **Stan Nowak**, & Pascal Haegeli (2018) Exploring regional snowpack patterns with gridded models. In *International Snow Science Workshop Proceedings*.

Journal

- J3. **Stan Nowak**, Miriam Rosing, Wolfgang Stuerzlinger, & Lyn Bartram (2021). Integrating Clinical Knowledge in the Analysis of Natural Histories of Oral Cancer through Visual Analytics. In *Frontiers in Oral Health*.
- J2. Simon Horton, **Stan Nowak**, & Pascal Haegeli (2019). Enhancing the operational value of snowpack models with visualization design principles. In *Natural Hazards and Earth System Sciences*.
- J1. Robert A. Fuhrman, **Stan Nowak**, & Eric Vatikiotis-Bateson (2016). Evaluating how fine-grained changes in the spatial and temporal properties of audiovisual speech influence the perception of linguistic meter. In *The Journal of the Acoustical Society of America*.

Magazine

- R1. **Stan Nowak**, Bon Adriel Aseniero, Lyn Bartram, Tovi Grossman, George Fitzmaurice, Justin Matejka (2023). Identifying Visualization Opportunities to Help Architects Manage the Complexity of Building Codes. In *IEEE Computer Graphics & Applications*.

Short Papers

- R1. **Stan Nowak**, Lyn Bartram (2022). Give Me the Data: Visual Analytics Needs to Go Beyond Visualization. In *ASCR Workshop on Visualization for Scientific Discovery, Decision-Making, & Communication*.

PROJECTS & SYSTEMS

AvIDdx Visualization System

2020 -

Designing and developing operational avalanche forecasting software visualizing various meteorological, citizen science, simulation, and remote sensing data. This work is being completed as part of a long-term research collaboration with Avalanche Canada for my thesis research. (*Svelte, D3.js, MapboxJS*)

TALKS

Interactive Visualizations for Avalanche Hazard Assessment

2021

Canadian Avalanche Association Spring Meeting *Virtual Conference*

Designing for Ambiguity: Visual Analytics in Avalanche Forecasting

2020

2020 IEEE Visualization Conference *Salt Lake City, Utah*

Visual Analytics in Avalanche Forecasting

2020

Western Innovation Forum *Burnaby, Canada*

Visualization Design, Analysis, and Visual Thinking

2020

SFU SciProg Research Commons Workshop *Burnaby, Canada*

Designing Visualization Tools for Avalanche Forecasters

2019

Canadian Avalanche Association Spring Meeting *Penticton, Canada*

Principles of Data Visualization and Interpretation

2019

SFU SciProg Research Commons Workshop *Burnaby, Canada*

Data Visualization: A Brief Introduction

2019

UBC Cognitive Systems Guest Lecture *Vancouver, Canada*

A Micro-Phenomenological Lens for Evaluating Narrative Visualizations

2018

BELIV Workshop *Berlin, Germany*

AWARDS

Helmut & Hugo Eppich Family Graduate Scholarship

2022

Amount: \$1200

Competitive scholarship to support intelligent systems science research

FCAT Graduate Fellowship

2021

Amount: \$3500

Graduate fellowship for the Faculty of Arts and Technology

Presidents PhD Scholarship

2021

Amount: \$7500

Competitive scholarship for students demonstrating scholarly output and leadership relative to peers

Andrew Wade Memorial Scholarship in Visual Analytics

2020

Amount: \$7500

Competitive scholarship for graduate students specializing in visual analytics

Van Pykstra Graduate Scholarship

2020

Amount: \$3700

Competitive scholarship to support intelligent systems science research

Graduate Fellowship

2020

Amount: \$6500

SFU Big Data Graduate Scholarships

2019

Amount: \$6500
Competitive scholarship to support big data research leaders

Graduate Fellowship 2019
Amount: \$3250

FCAT Graduate Fellowship 2019
Amount: \$3250
Graduate fellowship for the Faculty of Arts and Technology

Travel & Minor Research Award 2018
Amount: \$1000
Support for Travel and Research at *IEEE VIS 2018*

Andrew Wade Memorial Scholarship in Visual Analytics 2018
Amount: \$6800
Competitive scholarship for graduate students specializing in visual analytics

TEACHING

Visual Analytics Two-Day Course – Teaching Assistant 2019
INSTRUCTOR: Lyn Bartram
2-day overview of visual analytics for corporate clients. Aided development and delivery.

Introduction to Visual Analytics – Teaching Assistant 2019
INSTRUCTOR: Lyn Bartram
Simon Fraser University – School of Interactive Arts and Technology
Designed, delivered, and graded tutorials and assignments.

Visual Analytics Half-Day Course – Teaching Assistant 2018 - 2019
INSTRUCTOR: Lyn Bartram
Developed and delivered visual analytics course for BC Government and climate researchers.

Visual Analytics Half-Day course – Instructor 2017
Developed and delivered introduction to visual analytics for engineering students.

Management Information Systems – Teaching Assistant 2016
INSTRUCTOR: Alyn Amlani
University of British Columbia – Sauder School of Business
Developed and graded class exercises.

Andrew Wade Student Workshops – Instructor 2015 - 2017
Vancouver Institute for Visual Analytics – UBC & SFU
Developed and delivered 12-week introductory visual analytics course.

Analytics and interp. for Applied Sciences – Teaching Assistant 2016 - 2017
INSTRUCTOR: Iain Begg
Developed and delivered lab portion for the course.

SFU Continuing Studies Visual Analytics Certificate 2016
Aided the development of two continuing studies course on visual analytics.