

# Josua Krause

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## Education

### **PhD in Computer Science, NYU Tandon School of Engineering**

**dissertation:** “Using Visual Analytics to Explain Black-box Machine Learning”

**advisor:** Prof. Dr. Enrico Bertini

*New York, USA – 2013 - 2018*

### **MSc in Computer Science, University of Konstanz**

**thesis:** “Graph Comics: Interactive Staging for Exploring Dynamic Graphs”

**advisor:** Prof. Dr. Oliver Deussen, Prof. Dr. Enrico Bertini

*Konstanz, Germany – 2011 - 2014*

### **BSc in Information Engineering, University of Konstanz**

**thesis:** “Annotation of Changes in Evolving Graphs”

**advisor:** Prof. Dr. Oliver Deussen, Prof. Dr. Ulrik Brandes

*Konstanz, Germany – 2008 - 2011*

## Employments

### **Accern**

**role:** Vice President of Data Science

*New York, USA – 2020 - current*

### **NYU Tandon School of Engineering**

**role:** Adjunct Professor

*New York, USA – 2021*

### **Accern**

**role:** Senior Data Scientist

*New York, USA – 2018 - 2020*

### **Pacific Northwest National Laboratory**

**role:** PhD Intern, National Security Internship Program

*Washington, USA – 2016 and 2017*

## **IBM T. J. Watson Research Center**

**role:** Research Summer Intern

*New York, USA* – 2014 and 2015

## **NYU Tandon School of Engineering**

**role:** Research Assistant, Teaching Assistant

*New York, USA* – 2013 - 2018

## **University of Konstanz**

**role:** Research Assistant

*Konstanz, Germany* – 2009 - 2013

## **University of Konstanz**

**role:** Teaching Assistant

*Konstanz, Germany* – 2011 - 2012

## **Patents**

**Josua Krause, Kenney Ng, Adam Perer: “Identifying and ranking risk factors using trained predictive models”,**

*US Patent 11,355,245 and 11,355,246* – submitted 2017, accepted 2022

## **Invited Talks / Teaching**

**invited talk:** AI4CI: Artificial Intelligence for Collective Intelligence

*United Nations Development Programme* – 2022

**webinar:** How to Spot and Understand AI Bias within Financial Services

*Accern* – 2022

**blog:** Adaptive Modeling: Building Models that Last

*Accern* – 2021

**teaching:** Foundations of Data Science

*NYU Tandon School of Engineering* – 2021

**mentor:** Capstone Projects

*NYU Center for Data Science* – 2019 - 2020

**mentor:** Capstone Project

*Columbia University* – 2020

**teaching:** VIS for Practice Workshop – Vis. for the Web: Front- & Backends

*Universität Konstanz* – 2018

**teaching assistant:** Foundations of Data Science *NYU Tandon* – 2017

**teaching assistant:** Information Visualization *NYU Tandon* – 2015 - 2016

**teaching assistant:** Concepts of Comp. Sci. *Univ. Konstanz* – 2011 - 2012

## Committee Memberships

**session chair:** “Visualizing Machine Learning”

*IEEE VIS Short Papers Track* – 2020

**associate chair:** Special Applications Subcommittee

*ACM CHI Conference on Human Factors in Computing Systems* – 2019

**reviewer:** OPUS Grant Proposal

*National Science Center, Poland* – 2018

**chair:** *Workshop on Visual Analytics in Healthcare (VAHC)* – 2017

**journal reviewer**

Journal of Computational and Graphical Statistics – 2021 - 2022

Transactions on Visualization and Computer Graphics – 2015, 2018 - 2021

IEEE Transactions on Big Data – 2015, 2021

ACM Transactions on Interactive Intelligent Systems – 2021

IEEE Computer Graphics and Applications – 2015

**program committee / reviewer**

IEEE VIS – 2020 - 2022

IEEE VIS Short Papers Track – 2020 - 2022

EuroVis – 2016, 2019 - 2020, 2022

ACM Symposium on User Interface Software and Technology (UIST) – 2020

IEEE Information Visualization (InfoVis) – 2015, 2017 - 2019

IEEE Visual Analytics Science and Technology (VAST) – 2016 - 2019

ICLR Wrkshp. on Debugging Machine Learning Models (DEBUGML) – 2019

KDD Wrkshp. on Interactive Data Exploration and Analytics (IDEA) – 2018

IEEE Pacific Visualization Symposium (PacificVis) – 2018

ACM CHI Conference on Human Factors in Computing Systems – 2016

## Publications

**Josua Krause, Adam Perer, Enrico Bertini: “A User Study on the Effect of Aggregating Explanations for Interpreting Machine Learning Models”,**

*KDD 2018 Workshop on Interactive Data Exploration and Analytics (IDEA)* 2018

**Josua Krause, Aritra Dasgupta, Jordan Swartz, Yindalon Aphinyanaphongs, Enrico Bertini: “A Workflow for Visual Diagnostics of Binary Classifiers using Instance-Level Explanations”,**

*IEEE Transactions on Visualization and Computer Graphics (TVCG – VAST)* 2017

**Paolo Tamagnini, Josua Krause, Aritra Dasgupta, Enrico Bertini: “Interpreting Black-Box Classifiers Using Instance-Level Visual Explanations”,**

*Workshop on Human-In-the-Loop Data Analytics (HILDA)* 2017

**Josua Krause, Aritra Dasgupta, Enrico Bertini: “Explanatory Visual Analytics for Enhancing Human Interpretability of Machine Learning Models”,**

*Visualization in Data Science (VDS at IEEE VIS)* 2016

**Josua Krause, Adam Perer, Kenney Ng: “Interacting with Predictions: Visual Inspection of Black-box Machine Learning Models”,**

*Interactive Data Exploration and Analytics (IDEA)* 2016

**Josua Krause, Adam Perer, Enrico Bertini: “Using Visual Analytics to Interpret Predictive Machine Learning Models”,**

*ICML Workshop on Human Interpretability in Machine Learning (WHI)* 2016

**Josua Krause, Aritra Dasgupta, Jean-Daniel Fekete, Enrico Bertini: “SeekAView: An Intelligent Dimensionality Reduction Strategy for Navigating HD Data Spaces”,**

*IEEE Symposium on Large Data Analysis and Visualization (LDAV)* 2016

**Anshul Vikram Pandey, Josua Krause, Cristian Felix, Jeremy Boy, and Enrico Bertini: “Towards Understanding Human Similarity Perception in the Analysis of Large Sets of Scatter Plots” (Honorable Mention),**

*ACM Conference on Human Factors in Computing Systems (CHI)* 2016

**Josua Krause**, Adam Perer, and Kenney Ng: “**Interacting with Predictions: Visual Inspection of Black-box Machine Learning Models**”,  
*ACM Conference on Human Factors in Computing Systems (CHI)* 2016

**Josua Krause**, Adam Perer, and Harry Stavropoulos: “**Supporting Iterative Cohort Construction with Visual Temporal Queries**”,  
*IEEE Transactions on Visualization and Computer Graphics (TVCG - VAST)* 2015

**Josua Krause**, Narges Razavian, Enrico Bertini, and David Sontag: “**Visual Exploration of Temporal Data in Electronic Medical Records**”,  
*Poster Session I of the AMIA Annual Symposium; Poster* 2015

**Josua Krause** and Adam Perer: “**Data-Driven Cohort Construction with Interactive Visual Queries**”,  
*2015 Workshop on Visual Analytics in Health Care; Demo* 2015

**Josua Krause**, Narges Razavian, Enrico Bertini, and David Sontag: “**Visual Inspection of Longitudinal Electronic Medical Records**”,  
*2015 Workshop on Visual Analytics in Health Care; Demo* 2015

**Josua Krause**, Adam Perer, and Enrico Bertini: “**INFUSE: Interactive Feature Selection for Predictive Modeling of High Dimensional Data**”,  
*IEEE Transactions on Visualization and Computer Graphics (TVCG - VAST)* 2014

**Josua Krause**, Marc Spicker, Leonard Wörteler, Matthias Schäfer, Leishi Zhang, and Hendrik Strobel: “**Interactive Visualization for Real-time Public Transport Journey Planning**”,  
*Proceedings of SIGRAD* 2012