Josua Krause

email: josua.krause@gmail.com
web: https://www.josuakrause.com/
phone: +1 (917) 525 0807

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

UNDP, Accelerator Labs
role: NLP Researcher
focus on accessibility of large language models in low-resource environments and
facilitating information access in low-bandwidth communities through LLMs
New York, USA – 2023 - current

Accern, NLP startup in the FinTech space ($20M Series B early 2022)
role: Vice President of Data Science
lead of research, development, and deployment of AI models; focus on deep representation learning, natural language processing, and adaptive learning at scale
tenure: started during Pre-Series A as Senior Data Scientist
New York, USA – 2018 - 2023

NYU Tandon School of Engineering
role: Adjunct Professor
teaching: Foundations of Data Science
New York, USA – 2021

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, Teaching Assistant
Konstanz, Germany – 2009 - 2013

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

blog: Dot Product is a Bad Distance Function
blog: Asymmetric Topic Models
blog: The Problem with Teaching Language Models about the World
Medium – 2023

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, 2023

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 Computer Science *Univ. Konstanz – 2012*
teaching assistant: Concepts of Programming *Univ. Konstanz – 2011*

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 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"**,
*SIGMOD 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"**,
*KDD Workshop on 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 (**VAHC**); 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 (**VAHC**); 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 Strobelt: **"Interactive Visualization for Real-time Public Transport Journey Planning"**,
*Proceedings of **SIGRAD** 2012*