

Will Epperson

I'm a Ph.D. student in the HCII at CMU advised by Dominik Moritz and Adam Perer.

I build interactive tools to help data scientists better understand and make decisions with their data by automating the tedious parts of analysis and letting analysts spend more time focused on data insights. Data quality issues are often "silent" – models will still train but predictions will be inaccurate or dashboards may unknowingly present inaccurate metrics, making data understanding and debugging a critical part of analysis. My research explores how to best support data debugging through tools that model user interest during analysis, augment their data programming environment with automatic visualization, and support reusing previous analysis workflows.

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 CV PDF

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 Google Scholar

 LinkedIn

Education

August 2020 - Present

Ph.D. in Human Computer Interaction

Carnegie Mellon University

Advisors: Dominik Moritz, Adam Perer

Sample Coursework: HCI Process and Theory, Computational Medicine, Human Judgement and Decision Making, Causality and ML, Advanced NLP

August 2016 – May 2020

B.S. in Computer Science

Georgia Institute of Technology

GPA: 4.0, Summa Cum Laude, threads in Intelligence and Modeling/Simulation

Sample Coursework: Machine Learning, Deep Learning, Computer Vision, Computer Architecture, Algorithms, Computer Simulation, Information Visualization

Publications

Leveraging Analysis History for Improved In Situ Visualization Recommendation

Will Epperson, Doris Jung-Lin Lee, Leijie Wang, Kunal Agarwal, Aditya Parameswaran, Dominik Moritz, Adam Perer

Solas is a visualization recommendation tool that uses the history of analysis for in situ recommendations in Jupyter.

EuroVis 22: Eurographics Conference on Visualization (EuroVis). Rome, Italy, 2022.

   

Strategies for Reuse and Sharing among Data Scientists in Software Teams

Will Epperson, April Yi Wang, Robert DeLine, Steven M. Drucker

Interviews and a survey with 149 data scientists at Microsoft revealed five distinct strategies for sharing and reusing analysis code along with factors that encourage or discourage reuse.

ICSE 22: ACM International Conference on Software Engineering (ICSE). Pittsburgh, PA, 2022.

    

Diff in the Loop: Supporting Data Comparison in Exploratory Data Analysis

April Yi Wang, Will Epperson, Robert DeLine, Steven M. Drucker

Diff in the Loop supports tracking, comparing, and visualizing differences in datasets during iterative data analysis.

SIGCHI 22: ACM Symposium on Computer Human Interaction (CHI). New Orleans, LA, 2022.

  

RECAST: Interactive Auditing of Automatic Toxicity Detection Models

Austin P. Wright, Omar Shaikh, Haekyu Park, Will Epperson, Muhammed Ahmed,

Stephane Pinel, Diyi Yang, Duen Horng (Polo) Chau

Interactive Auditing of Automatic Toxicity Detection Models

24th ACM Conference on Computer-Supported Cooperative Work & Social Computing. 2021.

[Project](#) [PDF](#) [BibTeX](#)

FairVis: Visual Analytics for Discovering Intersectional Bias in Machine Learning

Angel Cabrera, Will Epperson, Fred Hohman, Minsuk Kahng, Jamie Morgenstern, Duen Horng (Polo) Chau

Discovering intersectional ML Bias through interactive visualization.

IEEE Conference on Visual Analytics Science and Technology (VAST). Vancouver, Canada, 2019.

[Project](#) [Demo](#) [PDF](#) [Blog](#) [Recording](#) [Code](#) [BibTeX](#)

Talks

Leveraging Analysis History for Improved In Situ Visualization Recommendation

June 2022

EuroVis 22: Eurographics Conference on Visualization

Strategies for Reuse and Sharing among Data Scientists in Software Teams

May 2022

ICSE 22: ACM International Conference on Software Engineering

FairVis

May 2019

VIS 19: IEEE Visualization Conference

Honors and Awards

2019

PURA: President's Undergraduate Research Award

\$1500 research grant to continue work on FairVis project

2016

Stamps President's Scholarship

Full ride scholarship given to 40 incoming freshman at Georgia Tech

Research Experience

August 2020 - Present

Carnegie Mellon University, Pittsburgh, PA

Graduate Researcher, Data Interaction Group (DIG)

Advisor: Dominik Moritz, Adam Perer

Member of the DIG research group, working on novel data visualizations, ML interpretation techniques, and interactive data systems.

Relevant Skills: Python, Javascript

January 2019 - May 2020

Georgia Institute of Technology, Atlanta, GA

Undergraduate Researcher, Polo Club of Data Science

Advisor: Duen Horng (Polo) Chau

Member of the Polo Club of Data Science working on novel data visualizations to find fairness issues in Machine Learning models

Relevant Skills: Python, Javascript

January 2018 - May 2019

Georgia Institute of Technology, Atlanta, GA

Undergraduate Researcher, Automated Algorithm Design

Advisor: Jason Zutty, Greg Rohling

Worked on EMAD algorithm design engine to implement sentiment analysis pipeline to analyze news articles to aid in predicting stock price movements using genetic algorithms. Led project to visualize the genetic algorithm evolution process.

Relevant Skills: Python, Javascript

Industry Experience

Summer 2022

Databricks, San Francisco, CA

Software Engineering Contractor

Mentor: Kanit Wongsuphasawat

Designed and delivered production feature for creating dashboards by specifying fields of interest in a dataset.

Relevant Skills: Typescript, Python

Summer 2021

Microsoft Research, Redmond, WA

Research Intern, VIDA Group

Mentor: Steve Drucker, Rob DeLine

Research intern working on data science tools. Lead project around reuse and sharing in data science, published at ICSE 2022. Also involved with project around visualizing data frame differences published at CHI 2022.

Relevant Skills: Python, Typescript

Summer 2019

Point72 Asset Management, New York, NY

Data Analytics Intern, Market Intelligence Group

Mentor: Trevor Rempel

Worked as Data Scientist in alternative data space to clean, model, and understand large datasets

Relevant Skills: Python, Distributed Computing in Spark

Summer 2018

Ultimate Software, Weston, FL

Software Development Intern, Innovation Strategies Team

Mentor: Joseph Cutrono

Designed and developed Slack app to integrate with the UltiPro HR management tool. App published to Slack app store.

Relevant Skills: Typescript, REST API development

Summer 2015

The Home Depot, Atlanta, GA

Software Development Intern

Developed web app for tracking candidate progress throughout hiring process for internal HR use.

Relevant Skills: Java, HTML/CSS/Javascript

Mentees

During my PhD, I have had the pleasure of mentoring the following undergraduate students on research projects.

Summer 2021 - Fall 2021

Leijie Wang

Visualization recommendation for python in notebooks using history

Fall 2021 - Spring 2022

Asad Sheikh

Visualization recommendation for SQL using history

Spring 2022+

Vaishnavi Gorantla

Fact generation from data and presentation as text

Teaching

Spring 2023

Graduate Teaching Assistant

Carnegie Mellon University, Pittsburgh, PA

Programmable User Interfaces, Instructor: Scott Hudson

Taught recitation, designed assignments for class about UI design and intro HTML/CSS/Javascript.

Fall 2022

Graduate Teaching Assistant

Carnegie Mellon University, Pittsburgh, PA

Interactive Data Science, Instructor: Adam Perer and John Stamper

Graded and office hours for class about using jupyter, visualization, steamlit and related tech for data science.

August 2017 - December 2018

Undergraduate Teaching Assistant

Georgia Institute of Technology, Atlanta, GA

Intro to Database Systems (CS 4400), Instructor: Monica Sweat

Designed projects, held office hours and graded for relational databases class.

Leadership & Activities

January 2019 - May 2020

Student Ambassador

Georgia Institute of Technology Alumni Association

Serve as official representative of the Institute at events/tours for alumni, prospective students, and special guests.

January 2018 - May 2019

Executive Board Member -- Threads Co-chair

Stamps Scholars National Convention 2019

Executive board member of Stamps Scholars National Convention, a 3-day conference with over 700 student attendees. Responsible for 20-person committee that plans and coordinates the different content threads of the convention.

Skills

Programing Languages: Python (Advanced), Javascript/Typescript (Advanced), SQL (Intermediate), Java (Intermediate), C (Basic)

Toolkits, Frameworks, Software: Pytorch, Scikit-learn, Git, VegaLite, D3, Tableau, MacOS, Windows, Linux

Natural Languages: English (Native), Spanish (Advanced)