









Austin P. Wright

ML + HCI researcher

I'm a Ph.D. student in the College of Computing at Georgia Tech advised by Polo Chau.

My research in **Scientific Human-Centered AI** aims to solve problems intersecting machine learning, human-computer interaction, and scientific computing, by using a strong principled basis in both mathematical and human centered principles to actualize the potential of new technologies by deep collaboration with scientists to develop tools with *usability*, *interpretability*, and *real scientific impact*.

 austinpwright.com
 apwright@gatech.edu
 CV PDF

 [Google Scholar](#)
 [@austin_p_wright](#)
 github.com/APWright

Education

- Fall 2019 – **Ph.D. in Machine Learning**
Present Georgia Institute of Technology
Advisor: Duen Horng (Polo) Chau
- Fall 2018 – **Msc. in Computing with Specialism in Machine Learning**
Fall 2019 Imperial College London
Thesis: Comparison of Syntactic and Semantic Representations of Programs in Neural Embeddings
Degree Class: Merit
- Fall 2014 – **B.A. in Physics and Computer Science**
Spring 2018 University of California, Berkeley
Overall GPA: 3.63 Physics GPA: 3.59 CS GPA: 3.87

Research Experience

- Summer 2020 –
Winter 2023 **NASA Jet Propulsion Laboratory**, Remote
Intern, Data Visualization
Mentor: Scott Davidoff
Joint work between NASA JPL, Caltech, and Art Center creating interactive data visualizations for current scientific research.
- Fall 2019 – Fall
2024 **Centers for Disease Control and Prevention**, Chamblee, GA
ORISE Fellow, National Center for Injury Prevention and Control
Mentor: Steve Sumner

Introduced natural language processing and data visualization tools for detecting emerging trends in the opioid epidemic.

- Fall 2019 – **Georgia Institute of Technology**, Atlanta, GA
Present *Graduate Research Assistant, School of Computational Science and Engineering*
Advisor: Duen Horng (Polo) Chau
Member of the Polo Club of Data Science where we bridge and innovate at the intersection of data mining and human-computer interaction to synthesize scalable, interactive, and interpretable tools that amplify human's ability to understand and interact with big data.
- Summer 2018 **Los Alamos National Laboratory**, Los Alamos, NM
Graduate Researcher, Dr. G. Robert Keepin Nonproliferation Summer School
Mentor: Karen Miller
Designed and built machine learning data analysis models and visualization dashboards for facility characterization, and spent fuel measurement using disparate stream data fusion.
- Winter 2017 – **Nuclear Science and Security Consortium**, Berkeley, CA
Spring 2018 *Undergraduate Affiliate, Complex Systems Group*
Mentor: Bethany Goldblum
Developed multiplex network modeling for nuclear nonproliferation and multisensor security systems, with a focus on machine learning in particular deep recurrent neural networks.
- Summer 2017 **CITRIS and the Banatao Institute**, Berkeley, CA
Undergraduate Research Assistant, Phoebe A. Hearst Museum of Anthropology
Mentor: Chris Hoffman
Lead creation of novel photogrammetry pipeline for Phoebe A Hearst Museum of Anthropology in collaboration with the CITRIS Pacific Research Platform.

Honors and Awards

- 2024 **KDD 2024 Best Paper Runner Up (Applied Data Science Track)**
For paper "Nested Fusion, A Method for Learning High Resolution Latent Structure of Multi-Scale Measurement Data on Mars"
- 2023 **NASA Space Act Award**
For the development of a significant scientific or technical contribution, PIXLISE + PIQUANT, spectroscopy analysis software NPO-52676-1, that has been determined to be of value in the conduct of an aeronautical or space activity of NASA.
- 2022 **Centers for Disease Control Excellence in Quantitative Sciences Award**
Internal CDC honor in recognition of ongoing work detecting emerging trends on social media
- 2020 **GT-GSU Public Interest Technology (PIT) Fellow**
The Southeast Region PIT Fellows program supports collaborations between technologists and social scientists centered around the historic and continued equity challenges of the Southeast region and provide a model for regional PIT work focused on community challenges.
- 2019 **Oak Ridge Institute of Science Education Fellowship**
Research Program at the Centers for Disease Control and Prevention (CDC), managed by the Oak Ridge Institute for Science and Education (ORISE) under an agreement between the CDC and the U.S. Department of Energy (DOE).
- 2019 **Georgia Tech President's Fellowship**
For "exemplary levels of scholarship and innovation"
- 2017 **U.S. Department of Energy Network Science and Nuclear Nonproliferation Challenge 1st Prize**
For novel deep recurrent neural network architectures to infer facility operations.
- 2016 **Pioneers in Engineering Outstanding Mentor Award**
For dedication to my students and enthusiasm in teaching

Publications

Nested Fusion: A Method for Learning High Resolution Latent Structure of Multi-Scale Measurement Data on Mars

Austin P. Wright, Scott Davidoff, Duen Horng (Polo) Chau

Proceedings of the 30th ACM SIGKDD Conference on Knowledge Discovery and Data Mining. 2024.

[Project](#) [BibTeX](#) [🏆 Best Paper Runner-Up \(Applied Data Science Track\)](#)

In-situ mapping of monocrystalline regions on Mars

Brendan J Orenstein, Michael WM Jones, David T Flannery, Austin P Wright, Scott Davidoff, Michael M Tice, Luke Nothdurft, Abigail C Allwood

Icarus. 2024.

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

Interactive Visual Learning for Stable Diffusion

Seongmin Lee, Benjamin Hoover, Hendrik Strobelt, Zijie J Wang, ShengYun Peng, Austin P. Wright, Kevin Li, Haekyu Park, Haoyang Yang, Duen Horng (Polo) Chau

arXiv preprint. 2024.

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

Concept Evolution in Deep Learning Training: A Unified Interpretation Framework and Discoveries

Haekyu Park, Seongmin Lee, Benjamin Hoover, Austin P Wright, Omar Shaikh, Rahul Duggal, Nilaksh Das, Kevin Li, Judy Hoffman, Duen Horng Chau

Proceedings of the 32nd ACM International Conference on Information and Knowledge Management. 2023.

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

Diffusion explainer: Visual explanation for text-to-image stable diffusion

Seongmin Lee, Benjamin Hoover, Hendrik Strobelt, Zijie J Wang, ShengYun Peng, Austin P. Wright, Kevin Li, Haekyu Park, Haoyang Yang, Duen Horng (Polo) Chau

arXiv preprint. 2023.

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

Lessons from the Development of an Anomaly Detection Interface on the Mars Perseverance Rover using the ISHMAP Framework

Austin P. Wright, Peter Nemere, Adrian Galvin, Duen Horng (Polo) Chau, Scott Davidoff

Proceedings of the 28th International Conference on Intelligent User Interfaces. 2023.

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

Alteration history of Séítah formation rocks inferred by PIXL x-ray fluorescence, x-ray diffraction, and multispectral imaging on Mars

Michael M Tice, Joel A Hurowitz, Abigail C Allwood, Michael WM Jones, Brendan J Orenstein, Scott Davidoff, Austin P. Wright, et. al

Science Advances. 2022.

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

Neurocartography: Scalable automatic visual summarization of concepts in deep neural networks

Haekyu Park, Nilaksh Das, Rahul Duggal, Austin P Wright, Omar Shaikh, Fred Hohman, Duen Horng (Polo) Chau

IEEE Transactions on Visualization and Computer Graphics. 2021.

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

Detection of emerging drugs involved in overdose via diachronic word embeddings of substances discussed on social media

Austin P. Wright, Christopher M Jones, Duen Horng (Polo) Chau, R Matthew Gladden, Steven A Sumner

Journal of Biomedical Informatics. 2021.

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

RECAST: Enabling User Recourse and Interpretability of Toxicity Detection Models with Interactive Visualization

Austin P. Wright, Omar Shaikh, Haekyu Park, Will Epperson, Muhammed Ahmed, Stephane Pinel, Diyi Yang, Duen Horng (Polo) Chau

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

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

A Comparative Analysis of Industry Human-AI Interaction Guidelines

Austin P. Wright, Zijie J. Wang, Haekyu Park, Grace Guo, Fabian Sperrle, Mennatallah El-Assady, Alex Endert, Daniel Keim, Duen Horng Chau

IEEE VIS, Workshop on TRust and EXPertise in Visual Analytics. 2020.

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

Mapping Researchers with PeopleMap

Jon Saad-Falcon, Omar Shaikh, Zijie J. Wang, Austin P. Wright, Sasha Richardson, Duen Horng (Polo) Chau

IEEE Visualization 2020. 2020.

[PDF](#) [BibTeX](#) [🏆 Honorable Mention Best Poster Research](#)

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

The eighth International Workshop of Chinese CHI. 2020.

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

The nuclear network: multiplex network analysis for interconnected systems

Bethany L. Goldblum, Andrew W. Reddie, Thomas C. Hickey, James E. Bevins, Sarah Laderman, Nathaniel Mahowald, Austin P. Wright, Elie Katzenson, Yara Mubarak

Applied Network Science volume 4, Article number: 36 (2019). 2019.

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

Smart Monitoring of Nuclear Facilities: Implementation Concepts and Development Status

Paul Michael Mendoza, Karen Ann Miller, Emily Michele Casleton, Janette Rose Frigo, Rosalyn Cherie Rael, Kendra Lu Van Buren, Jonathan Lee Woodring, Vlad Henzl, Austin P. Wright

LA-UR-19-26663. 2019.

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

Disparate Data Integration for Advanced Facility Monitoring

Karen Ann Miller, Kendra Lu Van Buren, Janette Rose Frigo, Max Zeyen, Joshua P. Sackos, Paul Michael Mendoza, Austin P. Wright

IAEA Symposium on International Safeguards. 2018.

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

Press

- 2023 "New Algorithm Perseveres in Search for Data Anomalies on Mars", Georgia Tech College of Computing
- 2022 "Mars rover digs up intriguing clues in the hunt for life beyond Earth", The Washington Post
- 2020 "Making Crime Data More Accessible and User Friendly", Georgia Tech College of Computing

Talks

- 2020 **A Comparative Analysis of Industry Human-AI Interaction Guidelines**
IEEE Vis Workshop on TRust and EXPertise in Visual Analytics

 [Video](#)

2020 **MORGANA - a flight rules authoring, validating, and evaluation tool**
JPL Data Visualization Internship Program, Final Presentation, Virtual

 [Video](#)

2020 **RECAST: Interactive Auditing of Automatic Toxicity Detection Models**
The eighth International Workshop of Chinese CHI, Virtual

2018 **Canary Project Review**
Department of Energy (DOE) National Nuclear Security Administration (NNSA) Defense Nuclear Nonproliferation Research and Development (DNN R&D) University Program Review (UPR)., Ann Arbor, Michigan

2017 **Canaries in a Nuclear Mine: Complexity Science for Nuclear Security**
Institute for Nuclear Materials Management, Sandia National Laboratories, Albuquerque, New Mexico

Mentoring

2019 –
2021 **Omar Shaikh**
B.S. in Computer Science, Georgia Institute of Technology
Natural Language Processing and Social Computing
🏆 Sigma Xi Best Undergraduate Research Award

2020 –
2021 **Jon Saad-Falcon**
B.S./M.S. in Computer Science, Georgia Institute of Technology
Data Visualization
🏆 Honorable Mention Best Poster Research

References

Dr. Polo Chau, Associate Professor
School of Computational Science and Engineering
Georgia Institute of Technology
Atlanta, GA, USA
cc.gatech.edu/~dchau/

Dr. Steven A. Summner, Senior Advisor for Data Science and Innovation
National Center for Injury Prevention and Control
Centers for Disease Control and Prevention
Atlanta, GA, USA
www.cdc.gov/injury/pressroom/fullbios_subjectmatterexperts/bio_StevenSumner

Dr. Scott Davidoff, Human-Computer Interaction Researcher
Human Interfaces Group
NASA Jet Propulsion Lab
Pasadena, CA, USA
scottdavidoff.com

Dr. Scott Jacques, Associate Professor
Department of Criminal Justice & Criminology