

Yongsu Ahn

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RESEARCH INTEREST

My research interest broadly lies in **human-centered responsible AI**, at the intersection of **Visual analytics (VA)** and **Interactive Machine learning (IML)**, **Fair** and **Explainable AI**. I study how AI-based tools and human-AI interaction will better assist the important decision making and information use. For the heterogeneous population of users including data practitioners, domain experts and lay users, I pursue *AI for everyone* to develop and promote human-centered AI that is fair, interpretable, and responsible by proposing viable tools.



EDUCATION

2017-Present University of Pittsburgh – Pittsburgh
Ph.D. Information Science and Technology
§ Advisor: Professor Yu-Ru Lin



2014-2016 University of North Carolina, Chapel Hill – Chapel Hill, US
M.S. Information and Library Science, Minor. Biostatistics
Thesis: The impact of the MERS Outbreak in Daily Lives: Sentiment Analysis of Korean Tweets using Time-series Method



2006-2013 Sungkyunkwan University (SKKU) – Seoul, Korea
B.S. Computer Engineering, B.A. Library and Information Science

PUBLICATIONS

 – eXplainable AI  – Fair AI
 – Visual Analytics  – Interactive Machine Learning
 – Computational Social Science

Under review

  Human Valuation of Explanations in Decision-Aids
Yongsu Ahn, Yu-Ru Lin, Malihe Alikhani, Eunjeong Cheon
ACM CSCW 2023 (Under review)

  Break Out of a Pigeonhole: A Unified Framework for Examining Miscalibration, Bias, and Stereotype in Recommender Systems

Yongsu Ahn, Yu-Ru Lin
ACM TIST 2023 (Under review)

CSS HungerGist: An Interpretable Predictive Model for Food Insecurity
Yongsu Ahn, Muheng Yan, Yu-Ru Lin, Zian Wang
IEEE BigData 2023 (Under review)

Conference / Journal

XAI VA IML VISPUR: Visual Aids for Identifying and Interpreting Spurious Associations in Data-Driven Decisions
Xian Teng, Yongsu Ahn, Yu-Ru Lin
IEEE VIS 2023

XAI VA IML ESCAPE: Countering Systematic Errors from Machine's Blind Spots via Interactive Visual Analysis
Yongsu Ahn, Yu-Ru Lin, Panpan Xu, Zeng Dai
ACM CHI 2023

CSS VA Improving Citizen-initiated Police Reform Efforts through Interactive Design: A Case Study in Allegheny County
Yongsu Ahn, Eliana Beigel, Noah Braun, Collin Griffin, Sera Linardi, Blair Mickles, Emmaline Rial
ACM Conference on Equity and Access in Algorithms, Mechanisms, and Optimization (EAAMO 2022)

XAI VA IML Tribe or Not? Critical Inspection of Group Differences Using TribalGram
Yongsu Ahn, Muheng Yan, Yu-Ru Lin, Wen-Ting Chung, Rebecca Hwa
ACM TiiS 2022

CSS VA PolicyFlow: Interpreting Policy Diffusion in Context
Yongsu Ahn, Yu-Ru Lin
ACM TiiS 2021
🏆 Best Paper Award (presented in IUI 2021)

Fair VA IML FairSight: Visual Analytics for Fairness in Decision Making
Yongsu Ahn, Muheng Yan, Yu-Ru Lin, Wen-Ting Chung, Rebecca Hwa
TVCG 2019

VA IML FacIt: Factorizing Tensors into Interpretable and Scrutinizable Patterns
Xidao Wen, Yu-Ru Lin, Yongsu Ahn, Konstantinos Pelechrinis, Xi Liu, Nan Cao
IEEE VIS 2019

Workshop



PolicyFlow: Interpreting Policy Diffusion in Context

Yongsu Ahn, Yu-Ru Lin

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

Internship

Jun, 2020

Bosch America, Sunnyvale, CA

Human-Machine Interaction team

Visual analytics for detecting and explaining unknown-unknowns

- Develop a visual analytic system (1) for detecting unknown-unknowns, which the classifier confidently fails due to the skewed distribution of training samples, (2) for sense-making what human understandable patterns attribute the failure
- Develop an image classification pipeline including training the state-of-art deep classifiers, identifying the saliency, and clustering the activations of inputs and segments using PyTorch

Research projects

2023-

Countering system-induced bias and stereotypes via human-centric interactive AI systems

Dissertation project

- Develop a framework for measuring miscalibration, bias, and stereotype in recommender system
- Propose an interactive system to support user-driven mitigation of system-induced stereotypes via counterfactual persona and explanations

2023-

Digitally Accountable Public Representation

Pitt Computational Social Dynamics Lab (PICSO Lab), funded by NSF

- Develop a visual analytic tool for monitoring the accountability of politicians in their social media activities

2022-2023

Habitus: Predicting food crisis in African Countries

Pitt Computational Social Dynamics Lab (PICSO Lab), funded by DARPA

- Develop predictive models to forecast future food crisis

2021-2022

Generating personalized justifications towards explainees' perception in recommendations

From the Natural Language Processing course

- Develop natural language generation model for producing justifications on rationales behind AI-assisted decisions that are associated with cognitive factors

2020-2022

Grief to Action: Project Police Union Contacts

Center For Analytic Approaches to Social Innovation (CAASI)

- Implement a web based guide to police complaints and a database of Allegheny county police contracts that identifies problematic language and allows cross-contract searching
 - Propose a visual analytic tool for interactive knowledge graph that visualizes problematic phrases and enables comparative analysis over corpus

- 2019–2021 DARPA Understanding Group Biases (UGB) Disruptioneering Program
 Pitt Computational Social Dynamics Lab (PICSO Lab), funded by DARPA
 :: TRIBAL: Visual Analytics for Explainable and Decomposable Group Difference
 - Design a visual analytic system for analyzing the group differences via sociolinguistic hierarchical features with interactive partial dependence plot, contrastive explanation with fact and foil decision tree
 :: STEP: STACKABLE Parallel Sets for visualizing heterogeneous and hierarchical features
 - Propose a parallel sets that encode multiple relations in a unified layout (between features, feature sets, and bipartite sets)

- 2019–2022 Analyzing the segment-level Electroencephalography (EEG) pattern
 Joint work with UPMC hospital
 - Classify the patient outcome with human-interpretable EEG motifs/prototypes with Lasso logistic regression and LSTM

- 2017–2020 PolicyFlow: Interpreting Policy Diffusion in Context
 PICSO Lab
 - Design a visualization tool to facilitate the study of policy diffusion by inferring the network of political actors from adoption sequences across different political contexts
 - Implement the interface of filtering the network and policy dataset coordinated by multiple visual components for temporal, spatial, and categorical context

- 2014–2016 Editor's note Project
 School of Information and Library Science, UNC at Chapel Hill
 - Design and implement the user interface of the web service for humanity scholars
 - Organize the JSON editor layout associated with linked data

Course projects

- 2018 A Survey on Diversity and Fairness in Ranking
 In the course named '*Doctoral Seminar in Data-Driven Decision-Making*'
 - Synthesized literature on definitions, measures, and algorithms of diversity and fairness in ranking problems, and presented a framework in ranking problems where diversity and fairness come into play together

Talks and presentations

Grief to Action: Project Police Union Contacts

Nov 2021 Year of Data and Society, University of Pittsburgh

Visualizing Policy Diffusion in Context, Tutorial and Presentation

Jun 2018 2018 State Politics and Policy Conference, Pennsylvania State University

Nov 2017 Graduate course named 'Ethics and Policy in Cyberspace', University of Pittsburgh

Research/Teaching experiences

2017- Teaching Assistant, Machine Learning, Data Mining, University of Pittsburgh
Research Assistant, PICSO Lab, University of Pittsburgh

§ Advisor: Professor Yu-Ru Lin

2016 Teaching Assistant, Big Data Analytics, SKKU

2014-2016 Research Assistant, School of Information and Library Science, UNC

§ Advisor: Professor Ryan Shaw

2014-2016 Research Assistant, Datalab, SKKU

§ Advisor: Professor Sam Oh

2014 Teaching Assistant, Building Digital Libraries, SKKU

Technical skills

Front-End JavaScript (React, React hooks, Redux, D3, Backbone.js),
HTML, CSS (SCSS, Styled-components)

Back-End Django, Flask

ML, STAT R, sklearn, pytorch

System Python, C and Java

Database MySQL, Postgres

Applications Adobe Photoshop, Premiere Pro, InDesign, Final Cut Pro and Oxygen editor

Honors, Awards, and Scholarships

2023 Graduate student travel grant, University of Pittsburgh

2023 Student travel grant, CHI 2023

2020 Best paper award from ACM TiiS

2018 Graduate student travel grant, University of Pittsburgh

2017-2023 Teaching and Research Assistantship, University of Pittsburgh

2014-2016 Research Assistantship, University of North Carolina, Chapel Hill

2014 Fellowship, University of North Carolina, Chapel Hill

2012 Silver Award, Sungkyun ConnApp Contest, SKKU

Awarded to a few selected teams who implemented creative applications using innovative ideas

2011–2012 Academic Scholarship, Department of Library and Information Science, SKKU
Two-time recipient of the scholarship, recognizing the top-ranking students for the semester

Service

Paper Reviewer

WWW 2018, 2019, 2021, 2022, 2023

KDD 2018, 2019

TVCG 2021, 2022

VIS 2021, 2023

CHI 2021, 2022

IEEE Computer and Graphics 2020