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

`XAI` – eXplainable AI   `Fair` – Fair AI
`VA` – Visual Analytics   `IML` – Interactive Machine Learning
`CSS` – Computational Social Science

Under review

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

`Fair` `CSS`   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)

Conference / Journal

`CSS` **HungerGist: An Interpretable Predictive Model for Food Insecurity**

Yongsu Ahn*, Muheng Yan*, Yu-Ru Lin, Zian Wang (*equally contributed)

IEEE BigData 2023 (To appear)

`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

CSS VA 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