

Yongsu Ahn

yong8@me.com || +1 412-537-5133 || ayong8

RESEARCH INTEREST

My research interest lies at the intersection of **Visual analytics (VA)** and **Interactive Machine learning (IML)**, **Fair** and **Explainable AI**, and **Natural Language Processing**. 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, US

Ph.D. Information Science and Technology

§ Advisor: Professor Yu-Ru Lin

Research interest: Visual Analytics, Fair and Explainable AI, Data Mining

2014-2016 University of North Carolina, Chapel Hill – Chapel Hill, US

M.S. Information and Library Science

Thesis: The impact of the MERS Outbreak in Daily Lives: Sentiment Analysis of Korean Tweets using Time-series Methods

Minor. Biostatistics

2006-2013 Sungkyunkwan University (SKKU) – Seoul, Korea

B.S. Computer Engineering

§ GPA: 3.58/4.00

B.A. Library and Information Science

§ GPA: 3.94/4.00

PUBLICATIONS

CONFERENCE / JOURNAL

- VA** **IML** **XAI** Teng, X., Ahn, Y., & Lin, Y. R. (2023). VISPUR: Visual Aids for Identifying and Interpreting Spurious Associations in Data-Driven Decisions. VIS 2023
- VA** **IML** **XAI** Ahn, Y., Lin, Y. R., Xu, P., Dai, Z.. (2023). ESCAPE: Countering Systematic Errors from Machine's Blind Spots via Interactive Visual Analysis. In ACM CHI Conference on Human Factors in Computing Systems (CHI).
- VA** **HCI** Ahn, Y., Beigel, E., Braun, N., Griffin, C., Linardi, S., Mickles, B., & Rial, E. (2022). Improving Citizen-initiated Police Reform Efforts through Interactive Design: A

Case Study in Allegheny County. In ACM Conference on Equity and Access in Algorithms, Mechanisms, and Optimization (EAAMO).

VA IML XAI

Ahn, Y., Yan, M., Lin, Y. R., Chung, W. T., Hwa, R. (2021). Tribe or Not? Critical Inspection of Group Differences Using TribalGram. In ACM Transactions on Interactive Intelligent Systems (TiiS).

VA

Ahn, Y., & Lin, Y. R. (2020). PolicyFlow: Interpreting Policy Diffusion in Context. In ACM Transactions on Interactive Intelligent Systems (TiiS). **(Best Paper Award, presented in IUI 2021)**

VA IML Fair

Ahn, Y., & Lin, Y. R. (2019). FairSight: Visual Analytics for Fairness in Decision Making. IEEE Transactions on Visualization & Computer Graphics (TVCG).

VA IML

Wen, X., Lin, Y. R., Ahn, Y., Pelechrinis, K., Liu, X., Cao, N. (2019). Fact: Factorizing Tensors into Interpretable and Scrutinizable Patterns. IEEE Visual Analytics Science and Technology (VAST).

WORKSHOP

VA

Ahn, Y., & Lin, Y. R. (2018). PolicyFlow: Interpreting Policy Diffusion in Context. In KDD 2018 Workshop on Interactive Data Exploration and Analytics (IDEA 2018), pp.829–843

INTERNSHIP

Jun, 2020 Bosch America, Sunnyvale, CA

VA IML XAI

Human-Machine Interaction team

Visual analytics towards 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

2022-Present Habitus: Predicting food crisis in African Countries

DM

University of Pittsburgh

- Develop predictive models to forecast future food crisis

2021-2022 Generating personalized justifications towards explainees' perception in recommendations

NLP

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

2021-Present The effect of explanation strategies on explanatory values

- XAI HCI NLP
- Evaluate the style of explanations and reveal cognitive and social psychological constructs from AI decision in various contexts on user's mental model, understandability, and trust

2020-2022 Grief to Action: Project Police Union Contacts

- VA
- 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

- VA IML XAI
- 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
- VA
- :: 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

- DM
- Joint work with UPMC hospital*
- Classify the patient outcome with human-interpretable EEG motifs/prototypes with Lasso logistic regression and LSTM

2018-2019 FairSight: Visualizing the fairness in Algorithmic Decision-Making

- VA IML Fair
- PICSO Lab*
- Design an interactive system to help understand the possible bias along the machine learning process, and identify and mitigate it with explainable machine learning techniques incorporated

2018-2019 Fact: Factorizing Multi-Aspect Data into Interpretable, Tunable and Scrutinizable Patterns

- VA IML
- PICSO Lab*
- Design an interactive tool to visualize patterns and dimensions of the multi-dimensional dataset from tensor factorization and help identify a combination of distinct patterns from spatial, temporal, and any other heterogeneous attributes

2017-2020 PolicyFlow: Interpreting Policy Diffusion in Context

VA

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

INFO UX

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*'
Summarized the studies 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

Nov 2021 Grief to Action: Project Police Union Contacts
Year of Data and Society, University of Pittsburgh

Jun 2018 Visualizing Policy Diffusion in Context, Tutorial and Presentation
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

2020 Best Paper Award from ACM Transactions on Interactive Intelligent Systems

2018 Graduate Student Travel Grant, University of Pittsburgh

2017-2019 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
KDD 2018, 2019
TVCG 2021
VIS 2021
CHI 2021, 2022
IEEE Computer and Graphics 2020