HYEON JEON

Ph.D Student, Dept. of Computer Science and Engineering @ SNU
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EDUCATION

Ph.D Student | ***Dept. of Computer Science and Engineering*** Sep.2022 – Present
Seoul National University Seoul, Korea

- Human-Computer Interaction Laboratory (advised by Dr. Jinwook Seo)

MS Student | ***Dept. of Computer Science and Engineering*** Sep.2020 – Aug.2022
Seoul National University Seoul, Korea

- Switched to Ph.D program in Sep. 2022

Bachelor of Science in Computer Science & Engineering Mar.2016 – Aug.2020
POSTECH Pohang, Korea

- Early graduation (seven semesters)
- Graduated with honors (Magna Cum Laude)

RESEARCH INTEREST

Visual Analytics, High-dimensional Data Analysis, Clustering, Dimensionality Reduction
Reliable Machine Learning for Visualization

PUBLICATIONS

PREPRINTS

[P02] **Hyeon Jeon**, Michaël Aupetit, DongHwa Shin, Aeri Cho, Seokhyeon Park, and Jinwook Seo. Sanity check for external clustering validation benchmarks using internal validation measures. *arXiv:2209.10042*

[P01] **Hyeon Jeon**, Michaël Aupetit, Soohyun Lee, Hyung-Kwon Ko, Youngtaek Kim, and Jinwook Seo. Distortion-aware brushing for interactive cluster analysis in multidimensional projections. *arXiv:2201.06379*

INTERNATIONAL JOURNALS

[J05] Seokweon Jung, DongHwa Shin, **Hyeon Jeon**, Kiroong Choe, and Jinwook Seo. Monetexplorer: A visual analytics system for analyzing dynamic networks with temporal network motifs. *IEEE Transactions on Visualization and Computer Graphics*, 2023. early access

[J04] **Hyeon Jeon**, Yun-Hsin Kuo, Michaël Aupetit, Kwan-Liu Ma, and Jinwook Seo. Classes are not clusters: Improving label-based evaluation of dimensionality reduction. *IEEE Transactions on Visualization and Computer Graphics (TVCG, Proc. VIS 2023)*, 2023. to appear.

[J03] **Hyeon Jeon***, Ghulam Jilani Quadri*, Hyunwook Lee, Paul Rosen, Danielle Albers Szafir, and Jinwook Seo. Clams: A cluster ambiguity measure for estimating perceptual variability in visual clustering. *IEEE Transactions on Visualization and Computer Graphics (TVCG, Proc. VIS 2023)*, 2023. to appear. (*equal contribution), received ***Best Paper Honorable Mention Award (Top 5% Submission)***

[J02] **Hyeon Jeon**, Hyung-Kwon Ko, Jaemin Jo, Youngtaek Kim, and Jinwook Seo. Measuring and explaining the inter-cluster reliability of multidimensional projections. *IEEE Transactions on Visualization and Computer Graphics (TVCG, Proc. VIS 2021)*, 28(1):551–561, 2022

[J01] Youngtaek Kim, Jaeyoung Kim, **Hyeon Jeon**, Young-Ho Kim, Hyunjoo Song, Bohyoung Kim, and Jinwook Seo. Githru: Visual analytics for understanding software development history through git metadata analysis. *IEEE Transactions on Visualization and Computer Graphics (TVCG, Proc. VAST 2020)*, 27(2):656–666, 2021

Peer-reviewed Conferences

[C09] Minsuk Chang, Donghun Kim, **Hyeon Jeon**, Seokweon Jung, and Jinwook Seo. Clever: Continual learning visualizer for detecting task transition failure. In *17th IEEE Pacific Visualization Conference (PacificVis)*, 2024. to appear.

[C08] Changmin Jeon, Jiwon Ha, Hyolim Hong, **Hyeon Jeon**, Hyeonsang Eom, Heonyoung Yeom, and Jinwook Seo. Iolens: Visual analytics system for exploring storage i/o tracking process. In *17th IEEE Pacific Visualization Conference (PacificVis)*, 2024. to appear

[C07] Hyung-Kwon Ko, **Hyeon Jeon**, Gwanmo Park, Dae Hyun Kim, Nam Wook Kim, Juho Kim, and Jinwook Seo. Natural language dataset generation framework for visualizations powered by large language models. In *2024 ACM Conference on Human Factors in Computing Systems (CHI)*, 2024. to appear

[C06] Juhye Ha, **Hyeon Jeon**, DaEun Han, Jinwook Seo, and Changhoon Oh. Clochat: Understanding how people customize, interact, and experience personas in large language models. In *2024 ACM Conference on Human Factors in Computing Systems (CHI)*, 2024. to appear

[C05] **Hyeon Jeon**, Aeri Cho, Jinhwa Jang, Soohyun Lee, Jake Hyun, Hyung-Kwon Ko, Jaemin Jo, and Jinwook Seo. Zadu: A python library for evaluating the reliability of dimensionality reduction embeddings. In *2023 IEEE Visualization and Visual Analytics (VIS)*, 2023. to appear.

[C04] Hyung-Kwon Ko, Gwanmo Park, **Hyeon Jeon**, Jaemin Jo, Juho Kim, and Jinwook Seo. Large-scale text-to-image generation models for visual artists' creative works. In *28th ACM International Conference on Intelligent User Interfaces (IUI)*, 2023. to appear.

[C03] **Hyeon Jeon***, Hyung-Kwon Ko*, Soohyun Lee, Jaemin Jo, and Jinwook Seo. Uniform manifold approximation with two-phase optimization. In *2022 IEEE Visualization and Visual Analytics (VIS)*, pages 80–84, 2022. (*equal contribution.)

[C02] Sebeom Park, Soohyun Lee, Youngtaek Kim, **Hyeon Jeon**, Seokweon Jung, Jinwook Bok, and Jinwook Seo. Vant: A visual analytics system for refining parallel corpora in neural machine translation. In *15th IEEE Pacific Visualization Symposium (PacificVis)*, 2022. to appear. received ***Best Visualization Notes (Top*** 1^{st} ***Submission)***

[C01] Youngtaek Kim, **Hyeon Jeon**, Young-Ho Kim, Yuhoon Ki, Hyunjoo Song, and Jinwook Seo. Visualization support for multi-criteria decision making in software issue propagation. In *14th IEEE Pacific Visualization Symposium (PacificVis)*, pages 81–85, 2021

Workshop Papers, Posters, and Domestics

[O04] Seokweon Jung, DongHwa Shin, **Hyeon Jeon**, and Jinwook Seo. Combinational nonuniform timeslicing of dynamic networks. In *17th IEEE Pacific Visualization Conference (PacificVis)*, 2024. (Poster)

[O03] Hyung-Kwon Ko, **Hyeon Jeon**, Gwanmo Park, Dae Hyun Kim, Nam Wook Kim, Juho Kim, and Jinwook Seo. A vega-lite dataset and natural language generation pipeline with large language models. In *VIS 2023 NLVIZ Workshop: Exploring Research Opportunities for NL, Text, and Data Visualization*, 2023

[O02] Seokweon Jung, DongHwa Shin, Jinwook Bok, Seokhyeon Park, **Hyeon Jeon**, Jinwook Seo, Insoo Lee, and Sooyoung Park. Interactive visual analytics system for criminal intelligence analysts with multiple coordinated views. *Journal of KIISE*, 50(1):47–56, 2023

[O01] Youngtaek Kim, **Hyeon Jeon**, Kiroong Choe, Hyunjoo Song, Bohyoung Kim, and Jinwook Seo. Interactive visualization for exploring information fragments in software repositories. In *14th IEEE Pacific Visualization Symposium (PacificVis)*, 2021. (Poster)

Experiences

Research Experiences

Visiting Ph.D. Student | ***VIDi Lab. (advised by Dr. Kwan-Liu Ma)*** — Jul.2022 – Dec.2022
University of California, Davis — Davis, CA

Undergraduate Intern | ***Human-Computer Interaction Lab.*** — Jan.2020 – Aug.2020
Seoul National University — Seoul, Korea

Research Student | ***Algorithms Lab.*** — Jun.2019 – Aug.2019
POSTECH — Pohang, Korea

Research Student | ***Computer Vision Lab.*** Jan.2019 – Feb.2019
POSTECH Pohang, Korea

Teaching Experiences

Teaching Assistant

- Information Visualization and Visual Analytics, Seoul National University 2023 Fall, 2021 Fall
  - Semi-advised three team projects to be conference papers [C02], [C08], [C09]
- Digital Computer Concept and Practice, Seoul National University 2020 Fall
  - Python programming
- Samsung AI Expert Program, Seoul National University 2023 Fall
  - Visual analytics for high-dimensional data
  - Used ZADU [C05] for the programming practice
- Samsung DS^2 Program, Seoul National University 2021 Fall, 2021 Spring, 2020 Fall
  - Data visualization

Tutoring & Mentoring

- Undergraduate Research Opportunities Program (UROP), Seoul National University 2023 Spring, 2021 Fall
- CSE Tutoring Program, POSTECH 2020 Spring, 2019 Fall
  - Algorithms (CSED331)
  - Automata and Formal Languages (CSED341)

Research Mentoring with Artifacts | All individuals listed have consented to be named in my CV

- *Minsuk Chang* (CSE Undergraduate Student, Seoul National University) Mar. 2023 – Present
  - Co-authored [C09], [U01]
  - Currently an incoming Ph.D. Student at Georgia Institute of Technology
- *Jinhwa Jang* (CSE MS Student, Seoul National University) Mar. 2023 – Present
  - Co-authored [C05]
  - Currently an MS Student at Seoul National University
- *Soohyun Lee* (CSE MS Student, Seoul National University) Mar. 2021 – Present
  - Co-authored [C02], [C03], [C05], [P01], [U01], [U06], [U07]
  - Currently a Ph.D. Student at Seoul National University
- *Sebeom Park* (CSE MS Student, Seoul National University) Sep.2021 – Feb.2023
  - Co-authored [C02]
  - Currently a staff engineer at Samsung Electronics

Academic Services

Program Committee

- Video Showcase, ACM CHI Conference on Human Factors in Computing Systems (CHI) 2024

Conference Reviewer (External)

- IEEE Visualization and Visual Analytics (VIS) 2022-2024
- Eurographics/IEEE VGTC Conference on Visualization (EuroVis) 2022-2024
- IEEE Pacific Visualization Symposium (PacificVis) 2022-2024
- ACM CHI Conference on Human Factors in Computing Systems (CHI) 2022-2024
- ACM Conference on Intelligent User Interfaces (IUI) 2023
- ACM Conference on Computer-Supported Cooperative Work and Social Computing (CSCW) 2024
- Conference on Neural Information Processing System (NeurIPS) 2022

Invited Journal Reviewer

- Visual Informatics 2022, 2021
- Journal of Visualization and Interaction (JoVI) 2024, 2023
- ACM Transactions on Knowledge Discovery from Data (TKDD) 2023
- IEEE Transactions on Geoscience and Remote Sensing (TGRS) 2024

Student Volunteers Chair

- IEEE Visualization and Visual Analytics (VIS) 2024

Student Volunteer

- IEEE Pacific Visualization Symposium (PacificVis) 2023
- IEEE Visualization and Visual Analytics (VIS) 2023, 2022
- ACM CHI Conference on Human Factors in Computing Systems (CHI) 2022

Awards & Honors

Best Paper Honorable Mention | ***2023 IEEE Visualization and Visual Analytics (VIS 2023)*** Oct. 2023
Top 5% of all submissions [J03] Melbourne, Australia

Best Visualization Notes | ***15th IEEE Pacific Visualization Symposium (PacificVis 2022)*** Apr. 2022
Top 1st of all submissions [C02] Tsukuba, Japan

Future Innovation Individual, Gold Award | ***SNU Brain Korea 21 (BK21)*** Mar. 2023
1st place among student researchers in SNU BK21, Granted 3,000,000 KRW ($\simeq$ 2,700 USD) Seoul, Korea

Outstanding Research Individual Fellowship | ***SNU CSE Brain Korea 21 (BK21)*** Mar. 2023
Granted 10,000,000 KRW ($\simeq$ 9,000 USD) Seoul, Korea

Star Student Researcher Award | ***SNU CSE Brain Korea 21 (BK21)*** Mar. 2023
Granted 700,000 KRW ($\simeq$ 600 USD) Seoul, Korea

Special Recognitions for Outstanding Reviews 2024
PacificVis 2024

Jigok Scholarship | ***POSTECH*** Mar.2016 – Aug.2020
Full scholarship throughout undergraduate Pohang, Korea

Talks & Presentations

Invited Talks

Towards reliable machine learning for visual analytics

- University of California, Davis (Visualization Research Group), *Scheduled* May. 2024

Making high-dimensional data analysis more reliable

- Georgia Institute of Technology (Visualization Group) Apr. 2024
- KAIST (Kixlab) Feb. 2024
- Google Feb. 2024
- Carnegie Mellon University (Data Interaction Group) Feb. 2024
- Havard Medical School (HIDIVE Lab) Jan. 2024

Making clusters more reliable

- Sungkyunkwan University (Interactive Data Computing Lab) Aug. 2023
- UNIST (HAiV Lab) Aug. 2023

- Sejong University (Data Visualization Lab) May. 2023
- University of North Carolina, Chapel Hill (Dept. of Computer Science) Nov. 2022

CLAMS: A Cluster ambiguity measure for estimating perceptual variability in visual clustering

- Korea Software Congress 2023 Dec. 2023
- 2023 Computing Frontier Summer School, Seoul National University Aug. 2023

Measuring and explaining the inter-cluster reliability of multidimensional projections

- Korea Software Congress 2022 Dec. 2022

Paper Presentations

- CLAMS: A cluster ambiguity measure for estimating perceptual variability in visual clustering VIS 2023
- Classes are not clusters: Improving label-based evaluation of dimensionality reduction VIS 2023
- Uniform manifold approximation with two-phase optimization VIS 2022
- Measuring and explaining the inter-cluster reliability of multidimensional projections VIS 2021

Personal Info

Skills

Languages: English (Fluent), Korean (First Language)
Programming: c/cplusplus, Python, Java, JavaScript, TypeScript
Visualizations: WebGL, D3.js
Parallel Computing: OpenMP, CUDA, Numba

Press Coverage

NAVER-SNU joint research, honored as 'Top 5%' paper at the prestigious data analysis conference.

- The Electronic Times (Korean) Sep. 2023

Measuring and explaining the inter-cluster reliability of multidimensional projections

- Seoul National University Artificial Intelligence Institute (SNU AIIS) Tech Blog Apr. 2022

References

Jinwook Seo | *Professor, Seoul National University* Ph.D. Advisor
jseo@snu.ac.kr

Kwan-Liu Ma | *Distinguished Professor, University of California, Davis* Research Collaborator and Advisor
klma@ucdavis.edu

Michaël Aupetit | *Senior Scientist, QCRI, Hamad Bin Khalifa University* Research Collaborator and Advisor
maupetit@hbku.edu.qa

Ghulam Jilani Quadri | *Assistant Professor, University of Oklahoma* Research Collaborator and Advisor
quadri@ou.edu

Jaemin Jo | *Assistant Professor, Syunkyunkwan Unveristy* Research Collaborator and Advisor
jmjo@g.skku.edu