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Jeongwhan Choi

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Research Experience

Integrated Ph.D. Student *Aug 2020 - Now*
Big Data Analytics Laboratory (BigDyL), Yonsei University (Advisor: Prof. Noseong Park)
Undergraduate Student Research Assistant *Jan 2020 - Aug 2020*
AI & SE Lab, Jeonbuk National University (Advisor: Prof. Duksan Ryu)
Undergraduate Student Research Assistant *Nov 2018 - Nov 2019*
Software System and Engineering Laboratory (SSEL), Jeonbuk National University (Advisor: Prof. Suntae Kim)

Educational Background

Integrated Ph.D., Artificial Intelligence *Sep 2020 - Now*
Yonsei University, Seoul, Republic of Korea
Bachelor, Software Engineering *Mar 2016 - Aug 2020*
Jeonbuk National University, Jeonju, Jeollabuk Do, Republic of Korea

- *magna cum laude* (GPA: 3.98/4.50)

Publication

Jinsung Jeon, Jaehyeon Park, Sewon Park, **Jeongwhan Choi**, Minjung Kim, and Noseong Park,"Possibility for Proactive Anomaly Detection", I Can't Believe It's Not Better: Challenges in Applied Deep Learning (ICBINB) Workshop at ICLR, 2025. [Paper]

Youn-Yeol Yu*, **Jeongwhan Choi***, Jaehyeon Park, Kookjin Lee, and Noseong Park,"PIORF: Physics-Informed Ollivier-Ricci Flow for Long–Range Interactions in Mesh Graph Neural Networks", In International Conference on Learning Representations (ICLR), 2025. [Acceptance Rate 32.08% (11,500)] [Paper]

Seonkyu Lim*, **Jeongwhan Choi***, Noseong Park,"FraudCenGCL: Enhancing Fraud Detection via Dual-View Graph Contrastive Learning with Account Centrality Features", In Social Impact: Bridging Innovations in Finance, Social Media, and Crime Prevention Workshop at AAAI 2025.

Seonkyu Lim*, **Jeongwhan Choi***, Jaehoon Lee, Noseong Park,"FrAug: Enhanced Fraud Detection in Interbank Transfers via Augmented Account Features", In AI4TS Workshop at AAAI 2025.

Seonkyu Lim*, **Jeongwhan Choi***, Jaehoon Lee, Noseong Park,"FrAug: Enhanced Fraud Detection in Interbank Transfers via Augmented Account Features", In IEEE BigComp, 2025.

Chaejeong Lee*, **Jeongwhan Choi***, Hyowon Wi, Sung-Bae Cho, and Noseong Park,"SCONE: A Novel Stochastic Sampling to Generate Contrastive Views and Hard Negative Samples for Recommendation", In the 18th ACM International Conference on Web Search and Data Mining (WSDM), 2025. [Acceptance rate: 17.3% (106/615)]

Seonkyu Lim*, **Jeongwhan Choi***, Jaehoon Lee, Noseong Park,"Enhanced Fraud Detection in Bank Transfers via Augmented Account Features", ACM ICAIF Workshop on Foundation Models for Time Series: Exploring New Frontiers (FM4TS), 2024. [Accepted for oral presentation]

Taeyang Lee, **Jeongwhan Choi**, Inyeob Na, Insun Yoo, Sungil Woo, Kwang Jong Kim, Mikyung Park, Joonghwan Yang, Jeongguk Min, Seokwoo Lee, Noseong Park, Joonyoung Yang,"Graph-Based Representation Approach for Deep Learning of Organic Light-Emitting Diode Devices", Advanced Intelligent System, 2024. [IF=6.8][Paper]

Jeongwhan Choi*, Hyowon Wi*, Jayoung Kim, Yehjin Shin, Kookjin Lee, Nathaniel Trask, Noseong Park,"Graph Convolutions Enrich the Self-Attention in Transformers!", In Conference on Neural Information Processing Systems (*NeurIPS*), 2024. [Paper Acceptance rate: 25.8%][arXiv]

Seonkyu Lim*, **Jeongwhan Choi***, Sang-Ha Yoon, Shinhyuck Kang, Young-Min Kim, and Hyunjoong Kang, "Bridging Dynamic Factor Models and Neural Controlled Differential Equations for Nowcasting GDP," In Proceedings of the 33rd ACM International Conference on Information and Knowledge Management (*CIKM*), 2024. [Applied Research Paper Acceptance rate: 32.59% (103/316)]

Jeongwhan Choi, Sumin Park, Hyowon Wi, Sung-Bae Cho, and Noseong Park, "PANDA: Expanded Width-Aware Message Passing Beyond Rewiring", in International Conference on Machine Learning (*ICML*), 2024. [Acceptance Rate 27.5% (2610/9473)][Paper][arXiv]

Jayoung Kim, Yehjin Shin, **Jeongwhan Choi**, Hyowon Wi, Noseong Park, "Polynomial-based Self-Attention for Table Representation Learning", in International Conference on Machine Learning (*ICML*), 2024. [Acceptance Rate 27.5% (2610/9473)][arXiv]

Seoyoung Hong, **Jeongwhan Choi**, Yeon-Chang Lee, Srijan Kumar, Noseong Park, "SVD-AE: Simple Autoencoders for Collaborative Filtering", in International Joint Conference on Artificial Intelligence (*IJCAI*), 2024. [Acceptance Rate 14.00% (791/5651)][arXiv]

Youn-Yeol Yu, **Jeongwhan Choi**, Woojin Cho, Kookjin Lee, Nayong Kim, Kiseok Chang, ChangSeung Woo, Ilho Kim, SeokWoo Lee, Joon Young Yang, Sooyoung Yoon, and Noseong Park, "Learning Flexible Body Collision Dynamics with Hierarchical Contact Mesh Transformer", in *ICLR*, 2024. [Acceptance Rate 30.81% (2250/7304)][arXiv]

Jeongwhan Choi*, Hyowon Wi*, Chaejeong Lee, Sung-Bae Cho, Dongha Lee, Noseong Park, "RDGCL: Reaction-Diffusion Graph Contrastive Learning for Recommendation", arXiv preprint arXiv: Arxiv-2312.16563, 2023. [arXiv]

Yehjin Shin*, **Jeongwhan Choi***, Hyowon Wi, Noseong Park, "An Attentive Inductive Bias for Sequential Recommendation beyond the Self-Attention", in *AAAI*, 2024. [Acceptance Rate 23.75% (2342/12100)] [arXiv]

Yeon Uk Jeong, **Jeongwhan Choi**, Noseong Park, Jae Yong Ryu, and Yi Rang Kim, "Predicting Drug-Drug Interactions: A Deep Learning Approach with GCN-Based Collaborative Filtering", *Available at SSRN 4640046* 2023.

Seonkyu Lim, Jaehyeon Park, Seojin Kim, Hyowon Wi, Haksoo Lim, Jinsung Jeon, **Jeongwhan Choi**, and Noseong Park, "Long-term Time Series Forecasting based on Decomposition and Neural Ordinary Differential Equations", In *IEEE International Conference on Big Data* (*Big Data*), 2023.

Jaehoon Lee, Chan Kim, Gyumin Lee, Haksoo Lim, **Jeongwhan Choi**, Kookjin Lee, Dongeun Lee, Sanghyun Hong and Noseong Park, "HyperNetwork Approximating Future Parameters for Time Series Forecasting under Temporal Drifts", *NeurIPS 2023 Workshop on Distribution Shifts* (*DistShift*), 2023.

Jeongwhan Choi and Duksan Ryu, "QoS-Aware Graph Contrastive Learning for Web Service Recommendation", In *Proceedings of the 30th Asia-Pacific Software Engineering Conference* (*APSEC 2023*), 2023.

Jeongwhan Choi and Noseong Park, "Graph Neural Rough Differential Equations for Traffic Forecasting", *ACM Transactions on Intelligent Systems and Technology* (*TIST*), 2023. [paper][IF=10.489]

Jeongwhan Choi, Seoyoung Hong, Noseong Park and Sung-Bae Cho, "GREAD: Graph Reaction-Diffusion Networks", In *Proceedings of the 40th International Conference on Machine Learning* (*ICML*), 2023. [paper] [code][Paper Acceptance rate: 27.94% (1,827/6,538)]

Jeongwhan Choi, Seoyoung Hong, Noseong Park and Sung-Bae Cho, "Blurring-Sharpening Process Models for Collaborative Filtering", In *Proceedings of the 46th ACM Conference on Research and Development in Information Retrieval* (*SIGIR*), 2023. [paper][code][Paper Acceptance rate: 20.1% (165/822)]

Jeongwhan Choi and Duksan Ryu, "Graph Convolution-based Collaborative Filtering for Web Service QoS Ranking", In *Proceedings of the 25th Korea Conference on Software Engineering* (*KCSE 2023*), 2023, pp. 58-67.

Hwangyong Choi, **Jeongwhan Choi**, Jeehyun Hwang, Kookjin Lee, Dongeun Lee and Noseong Park, "Climate Modeling with Neural Advection-Diffusion Equation", *Knowledge and Information Systems*, Jan. 2023. [paper] [IF=3.205(2021) Five year impact factor]

Jaehoon Lee, Chan Kim, Gyumin Lee, Haksoo Lim, **Jeongwhan Choi**, Kookjin Lee, Dongeun Lee, Sanghyun Hong and Noseong Park, "Time Series Forecasting with Hypernetworks Generating Parameters in Advance", *arXiv preprint arXiv: Arxiv-2211.12034*, 2022. [paper]

Seoyoung Hong, Heejoo Shin, **Jeongwhan Choi**, and Noseong Park, "Prediction-based One-shot Dynamic Parking Pricing", In *Proceedings of the 31st ACM International Conference on Information and Knowledge Management* (*CIKM*), 2022.[paper][code]

Jeongwhan Choi, Hwangyong Choi, Jeehyun Hwang and Noseong Park, "Graph Neural Controlled Differential Equations for Traffic Forecasting", In *AAAI*, 2022. [paper][code][Regular Paper Acceptance rate: 14.2% (1,161/8,198)] [Overall Acceptance rate: 15.2% (1,370/9,020)]

Taeyong Kong, Taeri Kim, Jinsung Jeon, **Jeongwhan Choi**, Yeon-Chang Lee, Noseong Park and Sang-Wook Kim, "Linear, or Non-Linear, That is the Question!", In *Proceedings of the 15th ACM International Web Search and Data Mining Conference* (*WSDM*), 2022. [paper][code] [Regular Paper Acceptance rate: 15.8% (80/505)] [Overall Acceptance Rate: 18% (315/1,765)]

Jeongwhan Choi and Duksan Ryu, "Self-Supervised Learning Using Feature Subsets of Software Defect Data", In *Proceedings of the Korea Software Congress* (*KSC*), Dec. 2021, pp.203-205.

Jeehyun Hwang, **Jeongwhan Choi**, Hwangyong Choi, Kookjin Lee, Dongeun Lee and Noseong Park, "Climate Modeling with Neural Diffusion Equations", In *Proceedings of the 21st IEEE International Conference on Data Mining* (*ICDM*), 2021. [paper] [code] [Regular paper acceptance rate: 9.9% (98/990)] [Overall Acceptance Rate: 20% (198/990)]

Jeongwhan Choi and Duksan Ryu, "Bayesian Optimization Framework for Improved Cross-Version Defect Prediction", *KIPS Transactions on Software and Data Engineering* (*KTSDE*), Vol. 10, No. 9, pp. 339-348, Sep. 2021.

Jeongwhan Choi, Jinsung Jeon, and Noseong Park, "LT-OCF: Learnable-Time ODE-based Collaborative Filtering", In *Proceedings of the 30th ACM International Conference on Information and Knowledge Management* (*CIKM*), 2021. [paper] [code] [Regular paper acceptance rate: 21.7% (271/1,251)] [Overall Acceptance rate: 22% (1,101/4,989)]

Jeongwhan Choi and Duksan Ryu, "Bayesian Optimization Framework for Cross-Version Defect Prediction", In *Proceedings of the 23rd Korea Conference on Software Engineering* (*KCSE 2021*), 2021, pp. 63-72. [Best Paper]

Jeongwhan Choi, Jiwon Choi, Duksan Ryu and Suntae Kim, "Improved Prediction for Configuration Bug Report Using Text Mining and Dimensionality Reduction", *Journal of KIISE*, 2021, Vol. 48, No. 1, pp. 35-42.

Jeongwhan Choi and Duksan Ryu, "A Study on the Applicability of Transfer Learning Techniques for Cross-Project Defect Regression", In *Proceedings of the Korea Software Congress* (*KSC*), 2020, pp. 150 - 152.

Jeongwhan Choi, Duksan Ryu, and Suntae Kim, "Comparative Study of Transfer Learning Models for Cross-Project Automotive Software Defect Prediction", In *Proceedings of the Korea Computer Congress* (*KCC*), 2020, pp. 257–259.

Jeongwhan Choi, Jiwon Choi, Duksan Ryu, and Suntae Kim, "Prediction for Configuration Bug Report Using Text Mining", In *Proceedings of the 22nd Korea Conference on Software Engineering* (*KCSE 2020*), 2020, pp. 350–357.

Jeongwhan Choi, Jiwoo Noh, and Suntae Kim, "Prediction Techniques for Difficulty Level of Hanja Using Multiple Linear Regression", *J. Inst. Internet, Broadcast. Commun.*, vol. 19, no. 6, 2019.

Seounghan Song, **Jeongwhan Choi**, Mingu Kang, and Cheoljung Yoo, "A Software Module That Analyzes the Relationship Between Headline and Content of the Web Article: CHIMERA", in *Proceedings of the 2019 KIIT DCS Summer Conference*, 2019, vol. 14, pp. 437–440.

Jeongwhan Choi, "Iceberg-Ship Classification in SAR Images Using Convolutional Neural Network with Transfer Learning", *J. Internet Comput. Serv.*, vol. 19, no. 4, pp. 35–44, 2018.

Awards & Scholarships

Merit Academic Paper Award, Yonsei University (Runner-up paper in Dept. of Artificial Intelligence) [link] *Feb 2025*

Outstanding Reviewer (Top 10%), KDD 2025 (August Cycle). *Dec 2024*

Qualcomm Innovation Fellowship Winner, Qualcomm Technologies Inc. (4M KRW, approx. 2.8K USD) [link] *Dec 2024*

Top Reviewer Award, LoG 2024. [link] *Nov 2024*

Top Reviewer Award, NeurIPS 2024. [link] *Nov 2024*

First Prize of Idea Competition, Korea Financial Telecommunications & Clearning Institute. [link] *Oct 2024*

Merit Academic Paper Award, Yonsei University (Runner-up paper in Dept. of Artificial Intelligence) [link] *Jul 2024*

Best Paper Award, Yonsei University (Best paper in Dept. of Artificial Intelligence) [link] *Jan 2024*

Graduate Student Research Assistantship (GSRA) Scholarship, Yonsei University *May 2023*

Academic Research Fellowship (ARF), Brain Korea 21 (BK21) Program, Yonsei University *Jan 2023*

Graduate Student Research Assistantship (GSRA) Scholarship, Yonsei University *Nov 2022*

Academic Research Fellowship (ARF), Brain Korea 21 (BK21) Program, Yonsei University *Sep 2022*

Innovation Award, Yonsei University (Best paper in Dept. of Artificial Intelligence) [link] *Jul 2022*

Graduate Student Research Assistantship (GSRA) Scholarship, Yonsei University *Apr 2022*

Best Paper Awards in the 23rd Korea Conference on Software Engineering (KCSE 2021) *Feb 2021*

Best Paper Awards in Dep. of Software Engineering, Jeonbuk National University *Dec 2019*

Best Paper Awards, Korean Institute of Information Technology *Jun 2019*

The National Scholarship for Science and Engineering, KOSAF(Korea Student Aid Foundation) *2018-2019*

- This scholarship supports undergraduates with strong academic performance in science and engineering, with the purpose of developing future leaders in these fields.

Academic Excellent Scholarship *2016-2019*

Talks

Talk on Top-conference session, Korea Software Congress (KSC 2023) *Dec 2023*

Talk on 1st Seminar held by Graph User Group (GUG) *Jun 2023*

Talk on Top-conference session, Korea Computer Congress (KCC 2023) [slides] *Jun 2023*

Talk on 2023 KSIAM AI Winter School, held by Korean Society for Industrial and Applied Mathematics (KSIAM)[slides][website] *Feb 2023*

Talk on 1st Workshop on AI held by Yonsei Univ. [slides][poster] *Oct 2022*

Poster presentation for AIGS Symposium 2022 held at the COEX Grand Ballroom [poster] *Aug 2022*

Talk on Top-conference session, Korea Computer Congress (KCC 2022) [slides] *Jul 2022*

Tutorial on Korea Artificial Intelligence Association (KAIA) *Nov 2021*

- Topic: "Graph-based Collaborative Filtering and Neural ODEs"
- This talk is part of a tutorial called "Deep Learning Inspired by Differential Equation" [slides].

Academic Services

Conference Organizer

- Web Chair: CIKM 2025

Reviewer or Program Committee Member for Conference

- SIGIR 2025
- ICLR 2025
- AISTATS 2025
- ICLR 2025
- NeurIPS 2024 (Top 8% Reviewer Award)
- AAAI 2024, 2025
- IJCAI 2024
- KDD 2023, 2024, 2025 (August & February Tracks)
- SDM 2024
- LoG 2022, 2023, 2024 (Top Reviewer Award)
- ICDM 2021, 2022
- AI4TS workshop at SDM 2025
- AI4TS workshop at AAAI 2025
- 4th Workshop on Graphs and More Complex Structures for Learning and Reasoning (GCLR) colocated with AAAI 2024

Reviewer for Journal

- Applied Economics Letters
- Neurocomputing (2 times)
- IEEE Transactions on Image Processing (TIP)
- IEEE Transactions on Knowledge and Data Engineering (TKDE) (2 times)
- Journal of Intelligent & Fuzzy Systems
- Applied Soft Copmuting (10 times)
- Applied Artificial Intelligence (2 times)
- IEEE Transactions on Intelligent Transportation Systems

Patents

[Issued Patent] Electronic Apparatus for Providing Recommendation Information and Operating Method Thereof, Noseong Park, Yehjin Shin, **Jeongwhan Choi**, Hyowon Wi, KR Patent (Issued Number: 10-2024-0136316). 2024.10.08 *Oct 2024*

[Issued Patent] System for Detecting Anomaly and Method Thereof, Sewon Park, Minjung Kim, Noseong Park, Jinsung Jeon, **Jeongwhan Choi**, Jaehyun Park, KR Patent (Issued Number: 10-2024-006519). 2024.01.06 *Jan 2024*

[Issued Patent] Apparatus and Method for Processing Spatiotemporal Data Based on Graph Neural Controlled Differential Equations, Noseong Park, **Jeongwhan Choi**, Jeehyun Hwang, Hwangyong Choi, US Patent (Issued Number: 18/085,109). 2022.12.20 [link] *Dec 2022*

[Issued Patent] Apparatus and Method for Processing Spatiotemporal Data Based on Graph Neural Controlled Differential Equations, Noseong Park, **Jeongwhan Choi**, Jeehyun Hwang, Hwangyong Choi, KR Patent (Issued Number: 10-2022-0151819). 2022.11.14 [link] *Nov 2022*

[Issued Patent] Apparatus and Method for Collaborative Filtering Based on Learnable-Time Ordinary Differential Equation, Noseong Park, **Jeongwhan Choi**, Jinsung Jeon, JP Patent (Issued Number: 2021-215162). 2021.12.28 *Dec 2021*

[Issued Patent] Apparatus and Method for Collaborative Filtering Based on Learnable-Time Ordinary Differential Equation, Noseong Park, **Jeongwhan Choi**, Jinsung Jeon, US Patent (Issued Number: 17/563726). 2021.12.28 [link] *Dec 2021*

[Issued Patent] Apparatus and Method for Collaborative Filtering Based on Learnable-Time Ordinary Differential Equation, Noseong Park, **Jeongwhan Choi**, Jinsung Jeon, KR Patent (Issued Number: 10-2021-0177928). 2021.12.13 [link] *Dec 2021*

[Granted Patent] Apparatus and Method for Measuring Difficulty Level of Chinese Character Using Regression Analysis, Suntae Kim, **Jeongwhan Choi**, Jiwoo Noh, KR Patent (Application Number:10-2019-0141339). 2019.11.07 [link] *Nov 2019*

References

- Noseong Park, (noseong@kaist.ac.kr)
- Sung-Bae Cho, (sbcho@yonsei.ac.kr)
- Duksan Ryu, (duksan.ryu@jbnu.ac.kr)
- Suntae Kim, (stkim@jbnu.ac.kr)