Kang-il Park

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Research Interests

Software engineering, human-computer interaction, eye tracking, empirical studies, mining software repositories, emotional awareness

Education

- **University of Nebraska-Lincoln** — Lincoln, NE
  Doctor of Philosophy - Computer Science — *Expected 2025*
- **University of Nebraska-Lincoln** — Lincoln, NE
  Master of Science - Computer Science — *May 2020*
- **University of South Dakota** — Vermillion, SD
  Bachelor of Science - Computer Science, Minor in Mathematics — *December 2017*

Academic Experience

- **University of Nebraska-Lincoln** — Lincoln, NE
  Graduate Researcher — *August 2018 - Present*
  - **Assessing Code Review Practices**: Conducted a study examining the effects of software engineering roles using an eye tracker to determine whether there is an effect on how programmers review code.
  - **Assessing Scoped Views for Program Comprehension**: Conducted a study in the BlueJ environment examining the effects of source code background highlighting using an eye tracker to determine whether there is an increase in productivity for programmers.
  - **Assessing Emotional Awareness During Bug Fixes**: Conducted a study examining the effects of a programmer's emotional awareness on bug fix progress while recording biometric information via eye-tracking, facial emotion, and Galvanic Skin Response(GSR).
  - **Analyzing Sentiment in GitHub Pull Requests (M.S. Project)**: Conducted a novel case study comparing the results of 5 different sentiment analysis tools (SentiStrength, SentiStrength-SE, SentiCR, NLTK, and Stanford-NLP) using a subset of the GHTorrent dataset of 46 million pull requests as well as documenting the progress in doing so while using a series of SQL, R, Python, and Bash scripts. (Committee - Bonita Sharif(Advisor), Hamid Bagheri, Witty Srisa-an)
- **University of Nebraska-Lincoln** — Lincoln, NE
  Graduate Assistant — *August 2018 - Present*
  - **Instructor**: Served as the primary instructor for undergraduate courses, independently designing syllabi, preparing and delivering lectures, creating assignments and exams. Utilized active learning techniques and integrated online tools (e.g., Canvas) to enhance student engagement and performance.
    List of courses: Computer Science II, Numerical Analysis
  - **Graduate Teaching Assistant**: Contributed to the design and management of courses, including object-oriented programming in Java, relational database concepts in SQL, software requirements engineering in UML, and data structures and algorithms in C++. Conducted lab and recitation sessions as the instructor and maintained the School of Computing's internal grading software.
    List of courses: Computer Science I, Computer Science II, Data Structures and Algorithms, Software Engineering, Discrete Mathematics, Numerical Analysis, Requirements Elicitation and Modeling.
  - **Graduate Research Assistant**: Research on the construction of techniques, tools, and environments to assist in program comprehension, software evolution, software visualization, and software traceability using empirical methods.
- **University of South Dakota** — Vermillion, SD
  Graduate Teaching Assistant — *January 2018 - May 2018*
  - Designed the lab course component, including assignments and exams of the Machine Organization course, teaching students both x86 and Nios II Assembly for PCs and FPGAs. Conducted lab sessions as the lab instructor and other duties as assigned.

Languages & Skills

R	Dplyr	Python	Pandas	Numpy
Java	C#	C++	MySQL	Javascript
MATLAB	HTML	CSS	LaTeX	RStudio
Google BigQuery	Qualtrics	Data Analysis	Data Modeling	Experimental Design
A/B Testing	Human Subjects Testing	Eye Tracking	Usability Studies	User Interviews

Peer-reviewed Publications

- Behler, J., Kozak, Z., Park, K., Sharif, B., & Maletic, J. "Extending Support for Analyzing Eye Tracking Studies on Python Source Code in iTrace" Eye Tracking Research & Applications (ETRA 2025). https://doi.org/10.1145/3715669.3725867
- Grabinger, L., Al Madi, N., Bednarik, R., Busjahn, T., Engl, F., Ezer, T., Gruber, H., Hauser, F., Maletic, J., Obaidellah, U., Park, K., Sharif, B., Sharafi, Z., Lynsay, S., & Mottok, J. "A Cookbook for Eye Tracking in Software Engineering." European Conference on Software Engineering Education (ECSEE 2025). https://doi.org/10.1145/3723010.3723018
- Park, K. "Assessing Software Developer Productivity and Emotional State Using Biometrics." International Conference on Software Maintenance and Evolution Doctoral Symposium Track (ICSME 2024). https://doi.org/10.1109/ICSME58944.2024.00086 **Presented at conference**
- Park, K., Johnson, J., Peterson, C., Yelda, N., Baysinger, I., Aponte, J., & Sharif, B. "An Eye Tracking Study Assessing Source Code Readability Rules for Program Comprehension." Empirical Software Engineering (EMSE 2024). https://doi.org/10.1007/s10664-024-10532-x
- Sharif, B., Park, K., DeJournett, M., Baysinger, I., Aly, M., & Maletic, J. "Examining the Effects of Layout and Working Memory on UML Class Diagram Defect Identification." Working Conference on Software Visualization (VISSOFT 2024). https://doi.org/10.1109/VISSOFT64034.2024.00017
- Park, K., Weill-Tessier, P., Brown, N. C., Sharif, B., Jensen, N., & Kölling, M. "An Eye Tracking Study Assessing the Impact of Background Styling in Code Editors on Novice Programmers' Code Understanding." Proceedings of the 2023 ACM Conference on International Computing Education Research (ICER) Volume 1, Chicago, Illinois, 2023. pp. 444-463, https://doi.org/10.1145/3568813.3600133
- Peterson, C., Park, K., Baysinger, I., and Sharif, B., (2021) "An Eye Tracking Perspective on How Developers Rate Source Code Readability Rules." 1st Workshop on Automated Support to Improve Code Readability (AeSIR 2021, co-located with ASE 2021). pp. 138-139, https://doi.org/10.1109/ASEW52652.2021.00037 **Presented virtually at conference**
- Park, K. and Sharif, B., (2021) "Assessing Perceived Sentiment in Pull Requests with Emoji: Evidence from Tools and Developer Eye Movements" 6th International Workshop on Emotion Awareness in Software Engineering (SEmotion 2021, co-located with ICSE 2021). pp. 1-6, https://doi.org/10.1109/SEmotion52567.2021.00009 **Presented virtually at conference**

Publications in Progress

- Park, K., Tietz, C., Serebrenik, A., & Sharif, B. "Assessing Developers Emotional State During Bug Fixes"
- Grabinger, L., Hauser, F., Ezer, T., Park, K., Villalobos Herrera, G., Maletic, J., Sharif, B., & Mottok, J. "New Insights in Perspective-Based Code Review"
- Magee, M., Park, K., Sharif, B., & Dodd, M. "Towards an Objective Measure of Mind Wandering"
- Weill-Tessier, P., Park, K., Brown, N. C., & Sharif, B. "Using Eye Tracking to Investigate Differences in Program Code Presentation"
- Mansoor, N., Park, K., Muske, T., Serebrenik, A., & Sharif, B. "An Eye Tracking Study on Assessing Repositioning and Merging of Static Analysis Alarms"
- Hoffman, A., Park, K., Kluthe, T., Williams, H., Sharif, B., & Stefik, A. "Significance of the Gaze in a Polyglot World"

- Rohrs, E., Behler, J., Park, K., Kozak, Z., Decker, M., Maletic, J., & Sharif, B. "Extending Support for Analyzing Eye Tracking Studies on the Chrome Web Browser in iTrace"

Awards

- **Nebraska i-Corps Intro to Customer Discovery Reimbursement Grant**: 2025 recipient, reimbursed for travel to the 2025 North American Coach Development Summit
- **University of Nebraska-Lincoln Research Experience for Undergraduates (REU) Mentor Travel Award**: 2025 Recipient
- **Mary E. and Elmer H. Dohrmann Fellowship**: 2025 Recipient
- **Milton H. Mohr Fellowship**: 2025 Recipient
- **University of Nebraska-Lincoln School of Computing Award**: 2024-2025 Graduate Student Research Award
- **NSF Student Travel Award**: Recipient for the 2024 International Conference on Software Maintenance and Evolution (ICSME) Conference
- **University of Nebraska-Lincoln Graduate Student Travel Award**: 2024 Recipient
- **Mary E. and Elmer H. Dohrmann Fellowship**: 2024 Recipient
- **University of Nebraska-Lincoln School of Computing Award**: 2021-2022 Most Improved PhD Student Award

Program Committees

- **ICSE 2026 Shadow PC**: ICSE 2026 Research track paper shadow reviewer

Teaching

- **CSCE 440/840 Numerical Analysis I (Instructor)**: Fall 2025
- **CSCE 156 Computer Science II (Instructor)**: Summer 2025
- **SOFT 162 Software Engineering Fundamentals (Teaching Assistant)**: Summer 2025
- **SOFT 161 Software Engineering II (Teaching Assistant)**: Spring 2025
- **SOFT 160 Software Engineering I (Teaching Assistant)**: Fall 2024
- **CSCE 468 Requirements Elicitation & Modeling (Teaching Assistant)**: Spring 2024
- **CSCE 235 Discrete Structures (Teaching Assistant)**: Fall 2023
- **SOFT 161 Software Engineering II (Teaching Assistant)**: Spring 2023
- **CSCE 440 Numerical Analysis (Teaching Assistant)**: Fall 2021
- **CSCE 310 Data Structures & Algorithms (Teaching Assistant)**: Fall 2021
- **CSCE 155E Computer Science I (Teaching Assistant)**: Summer 2021
- **CSCE 468 Requirements Elicitation & Modeling (Teaching Assistant)**: Spring 2020
- **CSCE 156 Computer Science II (Teaching Assistant)**: Fall 2019
- **CSCE 156 Computer Science II (Teaching Assistant)**: Spring 2019
- **CSCE 156 Computer Science II (Teaching Assistant)**: Fall 2018

Student Volunteering

- **Eye Movements in Programming (EMIP) Website - Webmaster**: Maintain and organize the workshop's websites to ensure up-to-date information and optimal accessibility regardless of platform.
- **ACM Symposium on Eye Tracking Research & Applications (ETRA) Website -Maintainer**: Maintain the general website for the conference to ensure up-to-date information is always listed.
- **ETRA 2021**: Organized and managed the conference's asynchronous component via the Discord platform. Provided miscellaneous technical support on MeetAnyway and Zoom for the synchronous components of the conference.
- **EMIP 2020**: Organized and managed the workshop's online platform based on Discord, ensuring proper asynchronous discussion and provided analytical data on levels of participation.

Outreach & Synergistic Events

- **School of Computing Tour (SERESL Panel) - Fall 2025**: Facilitated workshop on eye tracking with code for prospective computer science and engineering students.
- **University of Nebraska-Lincoln STEMVentures Summer Coding Camp**: Facilitated coding activities in Python and other workshops at the University's various STEM departments for middle school students from the Lincoln, NE area.
- **University of Nebraska-Lincoln Summer Research Program Mentor - Summer 2025**: Advised undergraduate researchers from multiple universities under the Research Experience for Undergraduates program (REU) in learning software engineering research methodologies.
- **NUTech Ventures Nebraska I-Corps Program - Spring/Summer 2025**: Participate and mentor undergraduate students in customer discovery and entrepreneurship throughout the NSF I-Corps program in the gazeDimension team.
- **School of Computing Admitted Student Day's Student Panel - March 2025**: Served on panel to demonstrate how eye tracking studies are conducted and answer potential student questions regarding graduate education in the University of Nebraska-Lincoln School of Computing.
- **Hour of Code Eye Tracking Workshop - December 2024**: Facilitated workshop on eye tracking with code for elementary and middle school students from the Lincoln, NE area.
- **University of Nebraska-Lincoln Research Experience for Undergraduates (REU) Symposium Judge - August 2024**: Evaluated undergraduate research posters for their visual content, oral content, and knowledge of the research project.
- **University of Nebraska-Lincoln Summer Research Program Mentor - Summer 2024**: Advised undergraduate researchers from multiple universities under the Research Experience for Undergraduates program (REU) in learning software engineering research methodologies.
- **Hour of Code Eye Tracking Workshop - December 2023**: Facilitated workshop on eye tracking with code for elementary and middle school students from the Lincoln, NE area.
- **School of Computing Graduate Information Day Student Panel - March 2023**: Served on the panel to demonstrate how eye tracking studies are conducted and answer potential student questions regarding graduate education in the University of Nebraska-Lincoln School of Computing.
- **Hour of Code Eye Tracking Workshop - December 2022**: Facilitated workshop on eye tracking with code for elementary and middle school students from the Lincoln, NE area.
- **Girls Code Lincoln Eye Tracking Workshop - April 2022**: Facilitated workshop on eye tracking with code for middle and high school students from the Lincoln, NE area.
- **School of Computing Graduate Information Day Student Panel - October 2021**: Served on the panel to answer potential student questions regarding graduate education in the University of Nebraska-Lincoln School of Computing.
- **Girls Inc. Summer Coding Workshop - July 2021**: Facilitated coding activities in JavaScript via the Code.org app lab and Java via the Eclipse IDE for young girls to introduce them to coding and computational thinking.
- **University of South Dakota High School Robotic Programming Contest - April 2018**: Coordinated annual robotic programming competition of 29 teams from 16 high schools and umpire rounds as needed.

Projects

- **i-Trace**: Lead of development of iTrace, an eye tracking software infrastructure for research studies in the software engineering domain, at UNL.
  URL: http://www.i-trace.org
  iTrace-Core: Implemented features based on the expanding scope of research projects, including modifying its C# code base to add support for multiple simultaneous data streams for both additional biometric data (eye tracking, electrodermal activity, facial expression data) and pair programming with multiple monitors.
  iTrace-Eclipse: Implemented features including modifying Eclipse plugin's Java code base to add support for additional biometric data (eye tracking, electrodermal activity, facial expression data)
  iTrace-Chrome: Wrote a modified version of i-Trace's Chrome Javascript frontend, specifically designed to record how much time a software developer spends time looking at emojis within DOM elements in GitHub's web pages to help determine the direction of future work in sentiment analysis in the software engineering domain.
- **Assessing Code Review Practices**: Conducted a study examining the effects of software engineering roles using an eye tracker to determine whether there is an effect on how programmers review code.
- **How do Developers Assess Emotion in Software**: Conducted an eye-tracking study that compared the results of 5 automated sentiment analysis tools against human developers to assess the accuracy of current tools as well as emphasizing the importance emojis have in expressing sentiment in the software engineering domain.

- **Assessing Emotional Awareness During Bug Fixes**: Conducted a study examining the effects of a programmer's emotional awareness on bug fix progress. Biometric information via eye-tracking, facial emotion, and Electrodermal Activity (EDA) were analyzed using a series of Python and R scripts.
- **Analyzing Sentiment in GitHub Pull Requests**: Conducted a study comparing the results of 5 different sentiment analysis tools (SentiStrength, SentiStrength-SE, SentiCR, NLTK, and Stanford-NLP) using a subset of the GHTorrent dataset of 46 million pull requests as well as documenting the progress in doing so while using a series of SQL, R, Python, and Bash scripts.
- **Data Analysis of the Eye Movements in Programming 2020 Workshop**: Mined data from EMIP 2020's virtual and asynchronous workshop held on the Discord platform to deliver statistics and visualizations, such as word clouds, words per message, predicted sentiment expressed, etc., to be displayed in social media (@emipws on Twitter)
- **COOL Compiler - Python**: Implemented the Lexer, Parser, Semantic Analyzer, and Interpreter of the Classroom Object-Oriented Language in the Python programming language.