Diana S. Kim

908. 300. 4582
dsk101@rutgers.edu
3411 Round Hill Rd, Branchburg, NJ 08876, U.S.A

Summary of Qualifications

- Ph.D. candidate in Computer Science in Rutgers University. Dissertation topic is Computational Semantic Analysis for Fine Art Paintings.

- Four publications in artificial intelligence conferences (two in AAAI) for the last five years and three publications as the first author. Primary research areas are machine learning, artificial intelligence, computer vision, and natural language processing. Conducted interdisciplinary machine learning research to generate a semantic analytic tool for visual art. Aimed to develop a novel computational system robust to the scarcity of data and achieved the frameworks less reliance on data by exploiting the knowledge of a targeted domain.

- Prepared lecturer with recitation and teaching assistant experience in the advanced subjects of machine learning and artificial intelligence. Preferred teaching subjects are foundational mathematics for data science (probability theory, statistics, and linear algebra), computer vision, machine learning theory and practice, and artificial intelligence.

- Oriented to develop academic courses that can lead the department to be promoted with state-of-the-art technology and suffice the students' intellectual needs and necessity for their future careers. Based on the profound knowledge and proficient programming skills, new courses–contents, projects, assignments, and examinations–will be designed to meet the course expectation. Excellent in Python and machine learning frameworks: TensorFlow and PyTorch, and competent in C++ and Java

Education

Rutgers University — New Brunswick, NJ
Ph.D. candidate in Computer Science — Expected May 2022

University of Southern California — Los Angeles, CA
M.S. in Electrical Engineering — Spring 2009

Ewha Woman's University — Seoul, South Korea
B.S. in Information Electronics Engineering — Spring 2004

Research Experience

The Art and Artificial Intelligence Laboratory at Rutgers University — New Brunswick, NJ
Graduate Researcher — 2017 – Present

- Interdisciplinary machine learning research for stylistic analysis and computational iconography of art [under supervision of Professor Elgammal, Ahmed] Completed research are listed in the section of publications.
- Current ongoing research is to define visual factors of emotional reactions to abstract paintings.
- Collaborations with Art and Architectural History [Professor Mazzone, Marian]

Host research internship at Rutgers University New Brunswick, NJ
Research Mentor Summer 2018

- Invited volunteer undergraduate students and provided project guidelines with given daily tasks. Publication with Jason Xu, "Computational Analysis of Content in Fine Art Paintings" (ICCC-19)

NSF - Research exchanging program at Yonsei University Seoul, South Korea
Visiting Researcher Summer 2016

- Research exchanging program EAPSI through National Science Foundation (NSF), invited by Language and Data Intelligence Lab [Professor Hwang, Seungwon]; delivered programming and system configurations for deep learning, and co-researched in learning multi-modal correlations between visual and textual data.

Communication System Laboratory at University of Colorado, Boulder Boulder, CO
Research Assistant (Electrical, Computer and Energy Engineering) 2009 – 2011

- Designed optimal power allocations in multi-access communication channel by using numerical methods. High-end mathematical probability methods were studied and used to obtain an optimal solution.
- This research is conducted when accepted in graduate program in Electrical Engineering at Colorado University at Boulder. No degree is pursued.

Publications

- **D. Kim**, A. Elgammal, and M. Mazzone, ``Proxy Learning of Visual Concepts of Fine Art Paintings from Styles through Language Models'', To be presented at the 36th AAAI Conference on Artificial Intelligence (AAAI-22)
- **D. Kim**, J. Xu, A. Elgammal, and M. Mazzone, ``Computational Analysis of Content in Fine Art Painting", Presentation at the 10th International Conference on Computational Creativity (ICCC-19)
- A. Elgammal, B. Liu, **D. Kim**, M. Elhoseiny, and M. Mazzone, ``The Shape of Art History in the Eyes of the Machine'', Presentation at the 32nd AAAI Conference on Artificial Intelligence (AAAI-18)
- **D. Kim**, B. Liu, A. Elgammal, and M. Mazzone, ``Finding Principal Semantics of Style in Art'', Presentation at the 12th IEEE International Conference on Semantic Computing (ICSC-18)

Teaching/Academic Conference Presentation Experience

Introduction to Discrete Structures I, CS 205 at Rutgers University New Brunswick, NJ
Recitation Lecturer Spring 2021

- This course is the first of a two-semester series on discrete mathematics for undergraduate students in computer science. Taught the topics of logic, set theory, number theory, languages and automata, and asymptotic analysis

Introduction to Discrete Structures II, CS 206 at Rutgers University New Brunswick, NJ
Recitation Lecturer Spring – fall 2020

- This course is the second of a two-semester series on discrete mathematics for undergraduate students in computer science. Taught the topics of counting, recurrence relations and generating functions, discrete probability theory, and graph theory

Machine Learning, CS536 at Rutgers University New Brunswick, NJ
Teaching Assistant Spring 2019

- Assisted grading assignments and held weekly TA hours

The 2nd Rutgers Computer Science Conference at Rutgers University — New Brunswick, NJ
Poster presentation — 2019

- D. Kim and A. Elgammal, "Computational Analysis on Fine Art Painting", awarded honorable mention

Introduction to Artificial Intelligence, CS 520 at Rutgers University — New Brunswick, NJ
Teaching Assistant and Recitation Lecturer — Fall 2018

- This is an undergraduate (senior)/graduate course to provide a broad introduction to artificial intelligence. Taught the classical AI algorithms such as problem-solving by searching, adversarial search, constraint satisfaction, knowledge representation, probabilistic reasoning, Making Complex Decisions, and introduction to machine learning
- Taught recitation sessions (1hour/week), assisted grading exams, and held weekly TA hours

Machine Learning, CS536 at Rutgers University — New Brunswick, NJ
Teaching Assistant — Spring 2018

- Programmed and made problem sets for assignments and exams, graded assignments and exams, and held weekly TA hours

The 32nd AAAI Conference on Artificial Intelligence (AAAI-18) — New Orleans, LA
Conference Presenter — 2018

- A. Elgammal, Y. Kang, and M. Den Leeuw, "Picasso, Matisse, or a Fake? Automated Analysis of Drawings at the Stroke Level for Attribution and Authentication"

Cryptography, CS 444 and **Linear Programming**, CS 521 at Rutgers University — New Brunswick, NJ
Teaching Assistant — Fall 2017

- Assisted grading and held weekly TA hours

Special Coursework for College Teaching

Completed the course of "Introduction to College Teaching' at Rutgers University — New Brunswick, NJ
Spring 2021

- This course provided an overview of teaching practices in higher education. Covered the topics of developing learning goals, teaching identity, active learning, teaching with technology, and fostering inclusive classroom environments.

Work Experience

Samsung Electronics — Seoul, South Korea
Software Engineer — 2003 – 2006

- Flash memory application design (C++), Mobile system debugging tool design: diagnosis management tool
- Device driver design: Modem chipset, sensor, and its application

Hynix Semiconductor — Seoul, South Korea
Internship — summer 2003

- Manufacture Examination Assistant: Microscopic digital photograph analysis

Grants and Awards

- NSF Award: East Asia and Pacific Summer Institutes for U.S. Graduate Students — 2016
- GAANN Fellowship at Colorado University in Boulder — 2009 – 2011
- Prize: Samsung Electronics, Contest: Best operation improvement award — 2004
- Scholarship: Ewha Womans University Dean List — 2002