Yelin Kim

Affective Computing Lead Scientist
Amazon Lab126

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Website: http://yelinkim.org

EDUCATION

University of Michigan, Ann Arbor, MI, USA 08/2016
Ph.D. in Electrical Engineering-Systems

University of Michigan, Ann Arbor, MI, USA 05/2013
M.S. in Electrical Engineering-Systems

Seoul National University, Seoul, South Korea 08/2011
B.S. in Electrical and Computer Engineering

RESEARCH EXPERIENCE

Amazon Lab126, Sunnyvale, CA 01/2019–Present
Affective Computing Lead Scientist, Amazon Astro

University at Albany, State University of New York, NY 09/2016–12/2018
Assistant Professor, Department of Electrical and Computer Engineering
Director, INSPIRE (Interaction Sensing and Perception in Real Environment) Lab

University of Michigan, Ann Arbor, MI 05/2012–08/2016
Computational Human-Centered Analysis and Integration Lab
Graduate Student Research Assistant
Title of Dissertation: "Automatic Emotion Recognition: Quantifying Dynamics and Structure in Human Behavior"

GE Global Research Center, Niskayuna, NY 05/2014–08/2014
Computer Vision Lab, Software, Sciences & Analytics Laboratory
R&D Intern

HONORS & AWARDS

Awards

Google Faculty Research Award 2018
Support Research on "Towards Emotionally Intelligent AI Systems: Robust and Adaptive Multimodal Emotion Recognition" *(Machine Perception Award Recipient)*
Press Release by UAlbany

SUNY-A Faculty Research Award 2017–2019
Support Research for Automatic Emotion Recognition Using Multimodal Signal Processing and Temporal Analysis Methods

Best Student Paper Award (lead author) 2014
ACM International Conference on Multimedia, MM 2014
Selected among total 679 submissions
Press Release by UMichigan
Press Release by IEEE Computer Society

Best Technical Poster Award 2014
The 10th Korean-American Scientists and Engineers Association (KSEA) Young Generation Technical and Leadership Conference, *1st place* in Engineering

Best Poster Award 2013
Engineering Graduate Symposium, University of Michigan, *1st place* in CSE

Conference Travel Awards from
National Science Foundation (NSF, 2015)
Computing Research Association's Committee on the Status of Women in Computing Research (CRA-W; 2014, 2015)
Rackham Graduate School at the University of Michigan (2013, 2014)
Department of Computer Science and Engineering at the University of Michigan (2013)

Fellowships

KETEP Korean Government Scholarship for Study Abroad	2011–2013
Qualcomm Scholarship	2011
Korea National Science Scholarship	2007–2011
Seoul National University Engineering Women Fellowship	2010
Temasek Foundation-Singapore Management University Leadership Enrichment and Regional NetworkIng Scholarship	2010
The National Academy of Engineering of Korea: Honors	2009

JOURNAL PUBLICATIONS

Yelin Kim, Tolga Soyata, and Reza Feyzi Behnagh. "Towards Emotionally-Aware AI Smart Classroom: Current Issues and Directions for Engineering and Education." *IEEE Access*, 2018. doi: 10.1109/ACCESS.2018.2791861. Impact Factor: 4.098

Yelin Kim and Emily Mower Provost. "ISLA: Temporal Segmentation and Labeling for Audio-Visual Emotion Recognition." *IEEE Transactions on Affective Computing (IEEE TAC)*. 2017; PP(99). Accepted, preprint, Impact Factor: 4.585

Yelin Kim and Emily Mower Provost. "Emotion Recognition During Speech Using Dynamics of Multiple Regions of the Face." *ACM Transactions on Multimedia Computing, Communications and Applications (ACM TOMM), Special Issue on ACM Multimedia Best Papers*. 2015; 12(1). pp.25:1–25:23. Impact Factor: 2.250

CONFERENCE PUBLICATIONS

Haoqi Li, **Yelin Kim**, Cheng-Hao Kuo, and Shrikanth Narayanan. "Acted vs. Improvised: Domain Adaptation for Elicitation Approaches in Audio-Visual Emotion Recognition." Interspeech. October, 2021.

Yelin Kim, Joshua Levy, and Yang Liu. "Speech Sentiment and Customer Satisfaction Estimation in Socialbot Conversations." Interspeech. October, 2020.

Joanna Hong, Hong Joo Lee, **Yelin Kim**, Yong Man Ro. "Face Tells Detailed Expression: Generating Comprehensive Facial Expression Sentence through Facial Action Units." 26th International Conference on Multimodal Modeling (MMM). January,

2020.

Sadat Shahriar and **Yelin Kim**. "Audio-Visual Emotion Forecasting: Characterizing and Predicting Future Emotion Using Deep Learning." IEEE International Conference on Automatic Face and Gesture Recognition (FG). May, 2019. [Note: full paper]

Ehab Albadawy and **Yelin Kim**. "Joint Discrete and Continuous Emotion Prediction Using Ensemble and End-To-End Approaches." *ACM International Conference on Multimodal Interaction (ACM ICMI). October, 2018.* [Note: full paper]

Yelin Kim and Jeesun Kim. "Human-Like Emotion Recognition: Multi-Label Learning from Noisy Labeled Audio-Visual Expressive Speech." *IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP). April, 2018.*

Jesse Parent and **Yelin Kim**. "Towards Emotion Recognition with Automatic Social and Relational Context Discovery in HRI Systems." *The AAAI Fall Symposium Series: Artificial Intelligence for Human-Robot Interaction (AI-HRI)*, November, 2017.

Yelin Kim and Emily Mower Provost. "Emotion Spotting: Discovering Regions of Evidence in Audio-Visual Emotion Expressions." *ACM International Conference on Multimodal Interaction (ACM ICMI)*, November, 2016. pp. 92–99 [Note: full paper]

John Gideon, Biqiao Zhang, Zakaria Aldeneh, **Yelin Kim**, Soheil Khorram, Duc Le, and Emily Mower Provost. "Wild Wild Emotion: A Multimodal Ensemble Approach." *ACM International Conference on Multimodal Interaction (ACM ICMI)*, November, 2016. pp. 501–505

Yelin Kim and Emily Mower Provost. "Leveraging Inter-rater Agreement for Audio-Visual Emotion Recognition." *Proceedings of International Conference on Affective Computing and Intelligent Interaction (ACII)*, September, 2015. pp. 553–559

Yelin Kim. "Exploring Sources of Variation in Human Behavioral Data: Towards Automatic Audio-Visual Emotion Recognition." *Proceedings of International Conference on Affective Computing and Intelligent Interaction (ACII) Doctoral Consortium*, September, 2015. pp. 748–753

Yelin Kim, Jixu Chen, Ming-Ching Chang, Emily Mower Provost, Xin Wang, and Siwei Lyu. "Modeling Transitional Patterns in-between Events for Temporal Human Action Segmentation and Classification." *IEEE International Conference on Automatic Face and Gesture Recognition (FG 2015), May, 2015. pp. 1–8.* [Note: full paper]
Acceptance rate: 12%

Yelin Kim and Emily Mower Provost. "Say Cheese vs. Smile: Reducing Speech-Related Variability for Facial Emotion Recognition." *Proceedings of the ACM International Conference on Multimedia (ACM MM'14).* November, 2014. pp. 27–36.
[Note: full paper]
Acceptance rate: 19%.
[Note: Best Student Paper Award]

Yelin Kim, Honglak Lee, and Emily Mower Provost. "Deep Learning for Robust Feature Generation in Audio-visual Emotion Recognition." *IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP). 2013. pp.3677–3681.*

Yelin Kim, Emily Mower Provost. "Emotion Classification via Utterance-level Dynamics: a Pattern-based Approach to Characterize Affective Expressions." *IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP). May, 2013. pp. 3687–3691.*

PATENTS

"False Positive Suppression Using Keypoints"
File Number: P69285-US01.
Inventors: Cheng-Hao Kuo, Zhuo Deng, Che-Chun Su, **Yelin Kim**
Filing Date: July 24, 2020

"Multimodal Sentiment Detection"
File Number: P68997-US01.
Inventors: **Yelin Kim**, Yang Liu, Dilek Hakkani-Tur, Tom Nelson, Anna Santos, Saurabh Gupta
Filing Date: January 6, 2020

"Systems and Methods For Simulating Emotion of Multimodal Interactive Devices Based on Contextual Information"
File Number: P66159-US01.
Inventors: **Yelin Kim**, Amin Atrash, Raumi Sidki, Vikas Deshpande, Saurabh Gupta
Filing Date: June 13, 2019

"Systems and Methods For Analyzing Time Series Data Based on Event Transitions."
U.S. Pub. No.: 2016/0321257 A1, 2016.
Inventors: Jixu Chen, Peter Henry Tu, Ming-Ching Chang, **Yelin Kim**, Siwei Lyu
Assignee: Morpho Detection, LLC (Newark, CA, US)
Publication Date: November 3, 2016
Academic Publication: Y. Kim et al., FG 2015

TEACHING EXPERIENCE

Probability and Random Processes
Instructor, SUNY Albany — Fall 2017, Fall 2018

Digital Signal Processing
Instructor, SUNY Albany — Spring 2017, Spring 2018
Graduate Student Instructor, UMichigan — Fall 2014

Introduction to Engineering Design
Instructor, SUNY Albany — Fall 2016

Probabilistic Methods in Engineering
Graduate Student Instructor, UMichigan — Winter 2015
Recognized Excellent performance in teaching (Overall Student Evaluation: 4.8/5.0)

Intelligent Interactive Systems
Guest Lecturer, UMichigan — Febrauary 2014

Human-Centered Computing
Guest Lecturer, UMichigan — March 2013

INVITED TALKS

"Affective Computing For Robotics." Keynote Speech, Amazon Botapalooza Symposium, Seattle, WA, Oct 2019.

"Multimodal Emotion Recognition: Quantifying Dynamics and Structure in Audio-Visual Expressive Speech." University of Rochester HCI, Rochester, NY, Dec 2018. (*Hosted by Prof. M. Ehsan Hoque*)

"Multimodal Emotion Recognition: Quantifying Dynamics and Structure in Audio-Visual Expressive Speech." Rochester Institute of Technology (RIT) AI Seminar Series, Rochester, NY, Dec 2018. (*Hosted by Prof. Dhireesha Kudithipudi*)

"Multimodal Emotion Recognition: Quantifying Dynamics and Structure in Audio-Visual Expressive Speech." University of Southern California EE Seminar, Los Angeles, CA, Oct 2018. (*Hosted by Prof. Shrikanth (Shri) Narayanan*)

"Multimodal Emotion Recognition: Quantifying Dynamics and Structure in Audio-Visual Expressive Speech." 2018 Fall Semester KAIST EE Colloquium Lecture Series, Daejoen, South Korea, Sep 2018. (*Hosted by Prof. Yong Man Ro and Prof. Hoirin Kim*)

"Multimodal Emotion Recognition: Quantifying Dynamics and Structure in Audio-Visual Expressive Speech." Seoul National University BK21 Seminar, Seoul, South Korea, Sep 2018. (*Hosted by Prof. Wonyong Sung*)

"Multimodal Emotion Recognition: Quantifying Dynamics and Structure in Audio-Visual Expressive Speech." Amazon Lab126, Sunnyvale, CA, USA, Aug 2018. (*Hosted by Pr. Engineer Roger Webster*)

"Multimodal Emotion Recognition: Quantifying Dynamics and Structure in Audio-Visual Expressive Speech." Google, New York, NY, USA, Aug 2018. (*Hosted by Dr. Brendan Jou*)

"Multimodal Emotion Recognition: Quantifying Dynamics and Structure in Human Behavior." Amazon Inc., Cambridge, MA, USA, Oct 2017. (*Hosted by Dr. Bo Xiao*)

"Audio-Visual Emotion Recognition: Quantifying Dynamics and Structure in Human Behavior." Society for Affective Science (SAS) Pre-Conference on Affective Computing, Boston, MA, USA, Apr 2017.

"Audio-Visual Emotion Recognition: Quantifying Dynamics and Structure in Human Behavior." Advanced Data Analytics Talk Series, University at Albany, State University of New York, Albany, NY, USA, Feb 2017.

Video Recording

"Automatic Emotion Recognition: Developing Machines That Identify Human Emotion." Cognitive Science Community, University of Michigan, Ann Arbor, MI, USA, Oct 2015.

"Exploring Sources of Variation in Human Behavioral Data: Towards Automatic Audio-Visual Emotion Recognition." International Conference on Affective Computing and Intelligent Interaction (ACII) Doctoral Consortium, Xi'an, China, Sep 2015.

"Audio-Visual Emotion Recognition: Quantification of Dynamics and Structure in Affective Behavior." Ford Research and Innovation Center, Palo Alto, CA, USA, Aug 2015. (*Hosted by Dr. Kyu Jeong Han*)

"Exploring Affective and Social Cues in Multimedia Content." IEEE International Conference on Automatic Face and Gesture Recognition (FG) Doctoral Consortium, Ljubljana, Slovenia, May 2015.

"Say Cheese vs. Smile: Reducing Speech-Related Variability for Facial Emotion Recognition." Signal Processing Systems Lab, Seoul National University (SNU), Seoul, South Korea, Jan 2015. (*Hosted by Prof. Wonyong Sung*)

CONFERENCE PRESENTATION

"Speech Sentiment and Customer Satisfaction Estimation in Socialbot Conversations." Interspeech. October 2020.

"Human-Like Emotion Recognition: Multi-Label Learning from Noisy Labeled Audio-Visual Expressive Speech." IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP). Calgary, Alberta, Canada. April 2018.

"Towards Socially Intelligent HRI Systems: Quantifying Emotional, Social, and Relational Context in Real-World Human Interactions." The AAAI Fall Symposium Series: Artificial Intelligence for Human-Robot Interaction (AI-HRI). Arlington, VA, November, 2017.

"Emotion Spotting: Discovering Regions of Evidence in Audio-Visual Emotion Expressions." ACM International Conference on Multimodal Interaction (ACM ICMI). Tokyo, Japan, November, 2016.

"Leveraging Inter-rater Agreement for Audio-Visual Emotion Recognition." International Conference on Affective Computing and Intelligent Interaction (ACII), Xian, China, Sep 2015.

"Modeling Transition Patterns Between Events for Temporal Human Action Segmentation and Classification." IEEE International Conference on Automatic Face and Gesture Recognition (FG), Ljubljana, Slovenia, May 2015.

"Say Cheese vs. Smile: Reducing Speech-Related Variability for Facial Emotion Recognition." The 22nd ACM International Conference on Multimedia (ACM MM), Orlando, Nov 2014. [Note: *Best Student Paper Award*]

"Deep Learning for Robust Feature Generation in Audio-Visual Emotion Recogni-

tion." Engineering Graduate Symposium, University of Michigan, Nov 2013. [Note: *Best Poster Presentation Award*]

"Deep Learning for Robust Feature Generation in Audio-Visual Emotion Recognition." IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP). Vancouver, British Columbia, Canada. May 2013.

"Emotion Classification via Utterance-Level Dynamics: A Pattern-Based Approach to Characterizing Affective Expressions." The 10th Korean-American Scientists and Engineers Association (KSEA) Young Generation Technical and Leadership Conference, Houston, Texas, Jan 2014. [Note: *Best Technical Poster Award*]

"Emotion Classification via Utterance-Level Dynamics: A Pattern-Based Approach to Characterizing Affective Expressions." IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP). Vancouver, British Columbia, Canada. May 2013.

"Emotion Classification via Utterance-Level Dynamics: A Pattern-Based Approach to Characterizing Affective Expressions." Engineering Graduate Symposium, University of Michigan, Nov 2012.

PROFESSIONAL ACTIVITIES

NSF Proposal Review Panelist, CISE - Cyber-Human Systems (CHS). 2017–2020

Chair, Amazon Research Award 2020–2021 - Human Robot Interaction

Conference Organizer

ACM International Conference on Multimodal Interaction (ICMI), 2021: Demo Co-Chair

International Conference on Affective Computing and Intelligent Interaction (ACII), 2019: Publicity Co-Chair

ACM International Conference on Multimodal Interaction (ICMI), 2018: Doctoral Consortium Co-Chair
NSF Award IIS:1829325 (PI: Yelin Kim, 2018–2019), "WORKSHOP: Doctoral Consortium at the ACM International Conference on Multimodal Interaction (ICMI 2018)"

IEEE International Conference on Automatic Face and Gesture Recognition (FG), 2018: Publicity Co-Chair

International Conference on Affective Computing and Intelligent Interaction (ACII), 2017: Doctoral Consortium Co-Chair
NSF Award IIS:1743034 (PI: Yelin Kim, 2017–2018), "Doctoral Consortium at the IEEE ACII 2017 Conference; October 23-26, 2017; San Antonio, Texas"

Workshop Organizer
The First Workshop on Bodily Expressed Emotion Understanding at ECCV 2020; Co-organized with James Wang and Reginald Adams (Penn State)

The Second Large-scale Emotion Recognition and Analysis (LERA) at IEEE FG,

2019; Co-organized with Qiang Ji (RPI) and Abhinav Dhall (IIT Ropar)

The First Large-scale Emotion Recognition and Analysis (LERA) at IEEE FG, 2018; Co-organized with Qiang Ji (RPI) and Abhinav Dhall (IIT Ropar)

Program Committee
Senior TPC Member, ACM International Conference on Multimodal Interaction, 2018, 2020
TPC Member, Pervasive Technologies Related to Assistive Environments, 2017

Review Services

IEEE Transactions on Affective Computing (TAC) (**Distinguished Reviewer**)
IEEE Transactions on Multimedia
IEEE Transactions on Information Forensics and Security
Journal of Artificial Intelligence Research (JAIR)
Speech Communication - Elsevier
Pattern Recognition - Elsevier
IEEE Robotics and Automation Letters (RA-L)
Computer Speech and Language (CSL)
ACM International Conference on Multimedia (MM)
ACM International Conference on Multimodal Interaction (ICMI)
International Conference on Affective Computing and Intelligent Interaction (ACII)
Doctoral Consortium
Interspeech

UNIVERSITY SERVICE

ABET Accreditation and Steering Committee Member 2016–Present
Department of Electrical and Computer Engineering, University at Albany, SUNY.

Chair Search Committee Member 2016–2017
College of Engineering and Applied Sciences (CEAS), University at Albany, SUNY.
Managed the tenured and tenure track faculty recruiting process and screened applications, collecting advice from the faculty at large as necessary; identified and invited promising candidates; coordinated and hosted candidate visits; made hiring recommendations.

Curriculum Development Committee Member 2016–2017
Department of Electrical and Computer Engineering, University at Albany, SUNY.
Developed M.S. and Ph.D. curriculum, particularly courses in signal processing, machine learning, human-centered computing, and probability.

Vice President 2013–2014
Korean Student Association Graduate (KSAG), University of Michigan

Advisory Committee Member 2013–2014
College of Engineering (CoE) Graduate Student Advisory Committee (GSAC), University of Michigan

OUTREACH

Mentoring Women and Minority Students in STEM

Actively involved as a workshop organizer and faculty mentor at SUNY Albany Science and Technology Entry Program (STEP) since 2016. Organized K–12 outreach

programs to prepare historically underrepresented and economically disadvantaged elementary and secondary students in the Albany City School District to acquire the aptitude and skills necessary to pursue careers in scientific and technical fields.

Mentored minority and female students to help them to transfer from MS to PhD and excel in their academic life at the University of Michigan, 2013–2016. This mentoring activity was through the Beyond the Master's Mentoring Program and ECSEL (Ensemble of Computer Science and Engineering Ladies) at the University of Michigan.

Lightning Talk, the Society of Women Engineers First Annual Leaders in Engineering Summit, University of Michigan, Mar 2014. Presentation to women engineers at the University of Michigan, encouraging research in human-centered and affective computing.

Panelist, College of Engineering New Graduate Student Welcome, University of Michigan, Aug 2013. Presentation to new graduate students in the College of Engineering.

Panelist, EECS Faculty/Grad/Alum Panel Event, hosted by student groups IEEE/ACM and gEECS (Girls in EECS), University of Michigan, Mar 2013. Presentation to undergraduate students encouraging research and graduate studies in EECS.

Panelist, CSE tour for Tech Day, University of Michigan, Sep 2012. Presentation to high school students encouraging research in human-centered and affective computing.

MEMBERSHIP Institute of Electrical and Electronics Engineer (IEEE)

Association for Computing Machinery (ACM)

Association for the Advancement of Artificial Intelligence (AAAI)