

ASHLEY (YE) GAO

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EDUCATION

- University of Virginia** 2019 - 2023
Advisor: John A. Stankovic
Thesis: *Addressing Realisms Faced by Deep Learning Models in Cyber Physical Systems*
Ph.D. in Computer Science
- University of Virginia** 2017 - 2019
M.S. in Computer Science
- University of California, San Diego** 2012 - 2017
B.S. in Computer Science
B.A. in Literatures of the World

RESEARCH OVERVIEW

My research direction lies in the field of **transfer learning** and **domain adaptation**, as well as the intersection of **deep learning** and **smart health**.

SELECTED PUBLICATIONS

- [**NeurIPS'23**] **Gao, Y.**, Ma, M., Zhang, D., Stankovic, J. A., "Attention Spatiotemporal Graph Convolutional Network Enhanced by Points of Interest as World Knowledge", Thirty-seventh Conference on Neural Information Processing Systems. (to be submitted).
- [**ArXiv**] **Gao, Y.**, Jabbour, J., Ko, E., Wijayasingha, L., Kim, S., Wang, Z., Ma, M., Rose, K., Gordon, K., Wang, H., Stankovic, J. A., "Integrating Voice-Based Machine Learning Technology into Complex Home Environments", arXiv preprint arXiv:2211.03149. [Paper]
- [**ECML'23**] **Gao, Y.**, Chu, Z., Wang, H., Stankovic, J. "MiddleGAN: Generate Domain Agnostic Samples for Unsupervised Domain Adaptation", European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases. (submitted). [Paper]
- [**SmartComp'23**] **Gao, Y.**, Baucom, B., Gordon, K., Rose, K., Wang, H., Stankovic. "E-ADDA: Unsupervised Adversarial Domain Adaptation Enhanced by a New Mahalanobis Distance Loss for Smart Computing", arXiv preprint arXiv:2201.10001. (accepted). [Paper]
- [**INA'22**] Rose, K., Gordon, K., Schlegel, E., McCall, M., **Gao, Y.**, Jabbour, J. and Ko, E., 2021. "Pandemic Deployment of a Smarthealth Technology to Improve Stress in Dementia Family Caregivers", *Innovation in Aging*, 5(Suppl 1), pp.450-450. [Paper]
- [**HEALTH'21**] **Gao, Y.**, Salekin, A., Gordon, K., Rose, K., Wang, H. and Stankovic, J., 2021. "Emotion Recognition Robust to Indoor Environmental Distortions and Non-targeted Emotions Using Out-of-distribution Detection", *ACM Transactions on Computing for Healthcare (HEALTH)*, 3(2), pp.1-22. [Paper]
- [**PERCOM'21**] **Gao, Y.**, Jabbour, J., Schlegel, E.C., Ma, M., McCall, M., Wijayasingha, L., Ko, E., Gordon, K., Rose, K., Wang, H. and Stankovic, J., 2021. "Out-of-the-Box Deployment to Support Research on In-Home Care of Alzheimer's Patients", *IEEE Pervasive Computing*, 21(1), pp.37-47. [Paper]
- [**JAN'21**] Rose, K.M., Coop Gordon, K., Schlegel, E.C., McCall, M., **Gao, Y.**, Ma, M., Lenger, K.A., Ko, E., Wright, K.D., Wang, H. and Stankovic, J., 2021. "Smarthealth technology study protocol to improve

relationships between older adults with dementia and family caregivers”, Journal of Advanced Nursing, 77(5), pp.2519-2529. [Paper]

[SENSYS’20] **Gao, Y.**, Ma, M., Gordon, K., Rose, K., Wang, H. and Stankovic, J., 2020, November. “A monitoring, modeling, and interactive recommendation system for in-home caregivers: Demo abstract”, In Proceedings of the 18th Conference on Embedded Networked Sensor Systems (pp. 587-588). [Paper]

WORK EXPERIENCE

- W1.** Teaching Assistant, Computational Biology, Department of Computer Science, University of Virginia. 2022
- W2.** Teaching Assistant, Signal Processing, Machine Learning and Control, Department of Computer Science, University of Virginia. 2022
- W3.** Teaching Assistant, Cyber Physical Systems and the Internet of Things, Machine Learning and Control, Department of Computer Science, University of Virginia. 2021
- W4.** Teaching Assistant, Signal Processing, Machine Learning and Control, Department of Computer Science, University of Virginia. 2021
- W5.** Research Assistant, CPS and Machine Learning, Department of Computer Science, University of Virginia. 2019 - 2023

HONORS AND AWARDS

- H4.** Best Poster at CS Symposium, University of Virginia. 2022
- H3.** UVA Computer Science PhD Fellowship, University of Virginia. 2019
- H2.** Dept of Comp Sci Academic Excellence Fellowship, University of Virginia. 2017
- H1.** Honors with High Distinction, University of California, San Diego. 2016

POSTER PRESENTATIONS

- P5.** “Learning and Improving Alzheimer’s Patient-Caregiver Relationships via Smart Healthcare Technology”, National Science Foundation Research Traineeship (NRT) Program at Virginia Tech. 2022
- P4.** “Learning and Improving Alzheimer’s Patient-Caregiver Relationships via Smart Healthcare Technology”, Link Lab Research Day at UVA. 2022
- P3.** “Learning and Improving Alzheimer’s Patient-Caregiver Relationships via Smart Healthcare Technology”, Computer Science Department Fall Research Symposium at UVA. 2022
- P2.** “Learning and Improving Alzheimer’s Patient-Caregiver Relationships via Smart Healthcare Technology”, Computer Science Department Spring Research Symposium at UVA. 2022
- P1.** “A Monitoring, Modeling, and Interactive Recommendation System for In-Home Caregivers”, The ACM Conference on Embedded Networked Sensor Systems (Sensys). 2020

PROFESSIONAL SERVICES

- S4.** Primary Reviewer. IEEE Transactions on Affective Computing. 2022
- S4.** Primary Reviewer. 37th AAAI Conference on Artificial Intelligence. AAAI. 2022
- S3.** Primary Reviewer. Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies. IMWUT/UbiComp. 2022
- S2.** Primary Reviewer. 36th Conference on Neural Information Processing Systems. NeurIPS. 2022
- S1.** Primary Reviewer. ACM Transactions on Computing for Healthcare. HEALTH. 2021

STUDENT ACTIVITY SERVICES

- S1.** Student Officer. Computer Science Department Graduate Student Group (CSGSG) at the UVA. 2019-2020

FEATURED

F1. Honors student of the Department of Literature at UCSD. [Webpage]

2016

ON-GOING RESEARCH WORKS (LEAD AUTHOR)

Learning and Improving Alzheimer's Patient-Caregiver Relationships via Smart Healthcare Technology. 2022

We use transfer learning to detect the emotions of caregivers of dementia patients and reinforcement learning to recommend interventions to them to help them manage their (negative) emotions.

Learning and Forecasting Traffic and Pollution Information in Smart Cities. 2022

We use graph neural network (GNN) based transfer learning to transfer-learn the traffic and weather information of a smart city to another smart city.

SELECTED PROJECTS

P4. Using Out-Of-Distribution Technique to Achieve Robustness of Deep Neural Network-Based Visual Recognition Classifiers. [Report]

- Propose a filter that can be applied to any pre-trained classifier to detect abnormal samples.
- Developed using pytorch.

2020

P3. Acoustic Pipeline for Speech-Based Emotion Detection. [Report]

- Proposing an acoustical pipeline consisting of classifiers for emotion detection.
- Developed using tensorflow.

2019

P2. A Comprehensive Product Rating System for Video Games Using Sentiment Mining. [Report]

- Mining sentiments from the reviews of video games on IGN to calculate a final rating.
- Developed using tensorflow.

2018

P1. Changed Bodies: Ovid, Sekien, and the Motif of Transformation. [Report]

- A comparative study on Ovid's *Metamorphoses* (1st century Rome CE) and Sekien's *Gazu Hyakki Tsurezure Bukuro* (18th century Japan).
- Honors thesis in the Department of Literature at the University of California, San Diego.

2016

REFERENCES

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