

RICHARD R. YANG

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EDUCATION

Stanford University

September 2017 - Present

M.S. Program in Computer Science, with Distinction in Research and Specialization in Artificial Intelligence

Research Advisor: Prof. Monica Lam

Research Interests: Deep learning, Computer Vision, Generative Neural Networks

University of Wyoming

August 2012 - May 2017

B.S. in Computer Science and B.S. in Computer Engineering, with Honors

Research Advisor: Prof. Jeff Clune

PUBLICATIONS

1. **Richard R Yang**. Multi-stage Optimization for Photorealistic Neural Style Transfer. Submitted to *NTIRE Workshop, Conference on Computer Vision and Pattern Recognition (CVPR)*. Under Review.
2. Michael Fischer, **Richard R Yang**, and Monica S Lam. ImagineNet: Preserving Details with Neural Style Transfer. Submitted to *International Joint Conference on Artificial Intelligence (IJCAI)*. Under Review.
3. **Richard R Yang**, Steven Chen, and Edward Chou. AI Blue Book: Vehicle Price Prediction using Visual Features. Under Review.
4. David V. Pynadath, Ning Wang, and **Richard R Yang**. Simulating Collaborative Learning through Decision-theoretic Agents. In Assessment and Intervention during Team Tutoring Workshop, *International Conference on Artificial Intelligence in Education (AIED)*, 2018
5. **Richard R Yang** and Mike Borowczak. Predictive Liability Models and Visualizations of High Dimensional Retail Employee Data. In *International Conference on Innovation in Artificial Intelligence*, 2018
6. **Richard R Yang**, Victor Kang, Sami Albouq, and Mohamed A Zohdy. Application of Hybrid Machine Learning to Detect and Remove Malware. In *Transactions on Machine Learning and Artificial Intelligence*, 3(4):16, 2015

WORK EXPERIENCE

Graduate Research Assistant

January 2018 - Present

Open Virtual Assistant Lab, Stanford University

Stanford, CA

- Building a system for automatic graphical user interface (GUI) layout generation from natural language commands using deep generative neural networks. Awarded Stanford CS 294s (AI Meets Systems) Final Project Honorable Mention.
- Improved previous neural style transfer algorithms by proposing a novel structural loss, which preserves details in images generated by style transfer. Lead to a new algorithm that can be used for non-artistic style transfer. Applications include GUI customization (in which lines and text need to be preserved) and photorealistic style transfer. Awarded Stanford CS 230 (Deep Learning) Final Project Prize.

Artificial Intelligence Scientist Intern

Summer 2018

NIO U.S.

San Jose, CA

- Worked on trajectory prediction for autonomous vehicles. Created a new data representation format for vehicle trajectory data and designed deep neural network models for prediction using this representation. Built an efficient data storage and input pipeline, which reduced training time per epoch from 6 hours to 5 minutes.

Visiting Research Assistant

Summer 2016 and Summer 2017

Institute for Creative Technologies, University of Southern California

Playa Vista, CA

- Designed multi-agent training simulations that require teamwork between agents. Built intelligent tutoring system that allows agents to revise their decision-theoretic models using reinforcement learning. Modeled human social behavior in agents by incorporating a psychology concept, theory of mind.

Research Assistant

August 2015 - May 2017

Evolving Artificial Intelligence Lab, University of Wyoming

Laramie, WY

- Visualized features learned by CNNs by synthetically generating and optimizing images that maximize neuron activations. Improved on existing technique by adding total variation regularization in the optimization step.
- Implemented a neural network to detect faces from camera feeds, and interfaced with a KUKA youBot to create an autonomous robot greeter.

Visiting Research Assistant

Summer 2015

Secure and Trustworthy Cyberspace Lab, Oakland University

Rochester, MI

- Collected a novel dataset of malware and benign executable files. Created an automatic malware detection and severity ranking pipeline using a combination of supervised and unsupervised learning.

PROJECTS

Pose Trainer: AI Personal Trainer using Pose Estimation

2018

- Created an application that detects the user's exercise pose using only a 2D webcam video. Implemented a heuristics-based model on human joint keypoints, and a machine learning model using dynamic time-sequence keypoint matching.

Vehicle Price Prediction using Product Images

2018

- Built a deep convolutional neural network that predicts prices of bicycles and cars using only a single image. Visualized features learned by the neural network and the image regions that led to higher or lower price predictions.

Liability Analysis of Retail Employees

2017

- Built an employee liability machine learning model trained on retail employee performance data. Identified the features representative of high and low risk employees. Created visualizations of the high dimensional data.

Teleoperated Sample Retrieval Rover for NASA Robo-Ops Competition

2016

- Designed and built two rovers from scratch with interdisciplinary senior design team. Design was selected as one of the finalists for NASA Robo-Ops competition and awarded \$10,000 for construction from NASA Langley Research Center. Lead computer science and computer engineering team.
- Built the software framework, which includes the motor control system, camera stream, sensor interface, and autonomous collision avoidance in ROS.

TECHNICAL SKILLS

Python, MATLAB, TensorFlow, Keras, Spark – experienced

JavaScript, PyTorch, Horovod, ROS, OpenCV – familiar

FELLOWSHIPS AND ASSISTANTSHIPS

- 2018-2019: Stanford Department of Computer Science, Graduate Research Assistantship - \$108,024
- 2017: Tau Beta Pi Graduate Fellowship - \$10,000
- 2017: Summer Research Program at USC Institute for Creative Technologies - \$13,050
- 2016: Wyoming NASA Space Grant Consortium, NASA Grant No. NNX15AI08H - \$5,000

- 2016: NSF Research Experience for Undergraduates, NSF Grant No. IIS-1560426 - \$9,050
- 2015: Wyoming Research Scholars Program - \$6,300
- 2015: NASA RASC-AL Robo-Ops Rover Competition Grant - \$10,000
- 2015: NSF Research Experience for Undergraduates, NSF Grant No. CNS-1460897 - \$7,500

ACHIEVEMENTS AND AWARDS

- 2017: Wyoming Engineering Society - Student Engineer of the Year Award (UW engineering highest honor)
- 2017: Finalist for Tobin Memorial Award for Outstanding Graduating Man of the Year (UW highest honor)
- 2017: UW Computer Science Department Honor Book Recipient
- 2017: UW Electrical and Computer Engineering Department Honor Book Recipient
- 2016: Wyoming Engineering Society Past President's Scholarship (top WES scholarship)
- 2016: American Council of Engineering Companies of Wyoming Scholarship (top ACECWY scholarship)
- 2015: Tau Beta Pi Engineering Honor Society UW Chapter - Outstanding Junior Award
- 2015, 2016: Sigma Alpha Epsilon Fraternity UW Chapter - Core Value Award (two-time recipient)
- 2014: UW Fraternity and Sorority Life - New Member of the Year Award
- 2014: ASUW Student Government Committee of the Year Member
- 2012: Tau Beta Pi Engineering Honor Society UW Chapter - Outstanding Freshman Award
- 2012-2016: UW Trustee's Pride Scholarship (top UW academic scholarship)

ASSOCIATIONS AND ACTIVITIES

- 2018-Present: Association for Advancement of Artificial Intelligence (AAAI), Student Member
- 2016-Present: Institute of Electrical and Electronics Engineers (IEEE), Student Member
- 2016: IEEE, UW Chapter President
- 2016: Tau Beta Pi Engineering Honor Society, UW Chapter Treasurer
- 2016: UW Joint Engineering Council, Representative
- 2015 - 2017: ASUW Student Government, Judicial Council Justice
- 2015: Mortar Board National Honor Society, UW Chapter Vice President
- 2015: Upsilon Pi Epsilon Computing and Information Honor Society, Member
- 2015: Order of Omega Greek Leadership Honor Society, Member
- 2014 - 2017: UW Electrical and Computer Engineering Dept. Advisory Board, Student Representative
- 2014 - 2016: Sigma Alpha Epsilon Fraternity, Wyoming Alpha Chapter Executive Board Member
- 2014: Cardinal Key National Honor Society, UW Chapter Vice President
- 2013 - 2015: ASUW Student Government, Senator
- 2013: SPURS Sophomore Honor Society, UW Chapter Member
- 2012: ASUW Student Government, Freshman Senator

COMMUNITY SERVICE

- 2015-2017: Volunteer tutor with Tau Beta Pi Engineering Honor Society

- 2010-2017: Volunteer audiovisual technician at Harvest Church, Laramie, WY
- 2016: Volunteer translator and campus guide for Shanghai Normal University visiting delegation
- 2015-2016: Haunted House philanthropy benefiting Laramie Cathedral Home for Children with Sigma Alpha Epsilon Fraternity
- 2014-2016: Volunteer at Relay for Life
- 2013-2016: Volunteer at the annual Big Event – Laramie community appreciation service day
- 2013: Volunteer at Chinese school for children with cognitive disabilities in Changchun, China