Serena Yeung-Levy
Assistant Professor of Biomedical Data Science and, by courtesy, of Computer Science and of Electrical Engineering
Department of Biomedical Data Science

CONTACT INFORMATION

• Administrative Contact
  Julie Kline - Faculty Administrator
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Bio

BIO
Dr. Serena Yeung-Levy is an Assistant Professor of Biomedical Data Science and, by courtesy, of Computer Science and of Electrical Engineering at Stanford University. Her research focus is on developing artificial intelligence and machine learning algorithms to enable new capabilities in biomedicine and healthcare. She has extensive expertise in deep learning and computer vision, and has developed computer vision algorithms for analyzing diverse types of visual data ranging from video capture of human behavior, to medical images and cell microscopy images.

Dr. Yeung-Levy leads the Medical AI and Computer Vision Lab at Stanford. She is affiliated with the Stanford Artificial Intelligence Laboratory, the Clinical Excellence Research Center, and the Center for Artificial Intelligence in Medicine & Imaging. She is also a Chan Zuckerberg Biohub Investigator and has served on the NIH Advisory Committee to the Director Working Group on Artificial Intelligence.

ACADEMIC APPOINTMENTS
• Assistant Professor, Department of Biomedical Data Science
• Assistant Professor (By courtesy), Computer Science
• Assistant Professor (By courtesy), Electrical Engineering
• Member, Bio-X
• Faculty Affiliate, Institute for Human-Centered Artificial Intelligence (HAI)
• Member, Wu Tsai Human Performance Alliance
• Member, Wu Tsai Neurosciences Institute

HONORS AND AWARDS
• Harvard Technology for Equitable and Accessible Medicine Fellowship, Harvard University (2018 - 2019)

PROFESSIONAL EDUCATION
• Postdoctoral Fellow, Harvard University (2019)
• Ph.D., Stanford University (2018)
Teaching

COURSES

2022-23
• Artificial Intelligence in Healthcare: BIODS 220, BIOMEDIN 220, CS 271 (Aut)
• Configuration of the US Healthcare System and the Application of Big Data/Analytics: BIODS 210 (Spr)
• Facial Plastic and Reconstructive Surgery: OTOHNS 209 (Spr, Sum)

2021-22
• Artificial Intelligence in Healthcare: BIODS 220, BIOMEDIN 220, CS 271 (Aut)
• Configuration of the US Healthcare System and the Application of Big Data/Analytics: BIODS 210 (Spr)
• Facial Plastic and Reconstructive Surgery: OTOHNS 209 (Spr, Sum)

2020-21
• Artificial Intelligence in Healthcare: BIODS 220, BIOMEDIN 220, CS 271 (Aut)
• Stakeholder Competencies for Artificial Intelligence in Healthcare: BIODS 388, BIOMEDIN 388 (Aut)
• Workshop in Biostatistics: BIODS 260A, STATS 260A (Aut)

STANFORD ADVISEES

Doctoral Dissertation Reader (AC)
Rachael Kretsch, Stefania Moroianu

Orals Chair
Agrim Gupta, James Hong

Postdoctoral Faculty Sponsor
Anita Rau, Xiaohan Wang, Zeyu Wang

Doctoral Dissertation Advisor (AC)
James Burgess, Jeffrey Gu, Ali Mottaghi, Jen Weng, Yuhui Zhang, Orr Zohar

Master's Program Advisor
Maya Czeneszew, Isaac Gorelik, Hannah Park, Elena Recaldini, Jennifer Xu, Orr Zohar

Doctoral (Program)
Sanket Gupte, Elana Simon, Yuhui Zhang

Publications

PUBLICATIONS
• Hyperbolic Deep Learning in Computer Vision: A Survey, *INTERNATIONAL JOURNAL OF COMPUTER VISION*
  Mettes, P., Atigh, M., Keller-Ressel, M., Gu, J., Yeung, S.
  2024

• Self-supervised learning for medical image classification: a systematic review and implementation guidelines, *NPJ digital medicine*
  Huang, S., Pareek, A., Jensen, M., Lungren, M. P., Yeung, S., Chaudhari, A. S.
  2023; 6 (1): 74

• Author Correction: Prostate cancer therapy personalization via multi-modal deep learning on randomized phase III clinical trials, *NPJ digital medicine*
• CryoET reveals organelle phenotypes in huntington disease patient iPSC-derived and mouse primary neurons. *Nature communications*
  2023; 14 (1): 692

• Comparing spatial patterns of marine vessels between vessel-tracking data and satellite imagery *FRONTIERS IN MARINE SCIENCE*
  Nakayama, S., Dong, W., Correro, R. G., Selig, E. R., Wabnitz, C. C., Hastie, T. J., Leape, J., Yeung, S., Micheli, F.
  2023; 9

• PROB: Probabilistic Objectness for Open World Object Detection
  Zohar, O., Wang, K., Yeung, S., IEEE
  IEEE COMPUTER SOC.2023: 11444-11453

• Generalizable Neural Fields as Partially Observed Neural Processes
  Gu, J., Wang, K., Yeung, S., IEEE
  IEEE COMPUTER SOC.2023: 5307-5316

• *NeMo*: 3D *Ne*ural *Mo*tion Fields from Multiple Video Instances of the Same Action
  Wang, K., Weng, Z., Xenochristou, M., Araujo, J., Gu, J., Liu, C., Yeung, S., IEEE
  IEEE COMPUTER SOC.2023: 22129-22138

• Using AI and computer vision to analyze technical proficiency in robotic surgery. *Surgical endoscopy*
  2022

• Developing medical imaging AI for emerging infectious diseases. *Nature communications*
  2022; 13 (1): 7060

• Prostate cancer therapy personalization via multi-modal deep learning on randomized phase III clinical trials. *NPJ digital medicine*
  2022; 5 (1): 71

• AUTOMATED DETECTION OF ISOLATED REM SLEEP BEHAVIOR DISORDER (IRBD) DURING SINGLE NIGHT IN-LAB VIDEO-POLYSOMNOGRAPHY (PSG) USING COMPUTER VISION
  Adaimi, G., Gupta, N., Mottaghi, A., Yeung, S., Mignot, E., Alahi, A., During, E.
  OXFORD UNIV PRESS INC.2022: A282

• Adaptation of Surgical Activity Recognition Models Across Operating Rooms
  Mottaghi, A., Sharghi, A., Yeung, S., Mohareri, O., Wang, L., Dou, Q., Fletcher, P. T., Speidel, S., Li, S.
  SPRINGER INTERNATIONAL PUBLISHING AG.2022: 530-540

• Domain Adaptive 3D Pose Augmentation for In-the-wild Human Mesh Recovery
  Weng, Z., Wang, K., Kanazawa, A., Yeung, S., IEEE
  IEEE.2022: 261-270

• Using deep learning to identify the recurrent laryngeal nerve during thyroidectomy. *Scientific reports*
  2021; 11 (1): 14306

• Deep Convolutional Neural Networks as a Diagnostic Aid-A Step Toward Minimizing Undetected Scaphoid Fractures on Initial Hand Radiographs. *JAMA network open*
  Jopling, J. K., Pridgen, B. C., Yeung, S.
  2021; 4 (5): e216393

• Setting Assessment Standards for Artificial Intelligence Computer Vision Wound Annotations. *JAMA network open*
Jopling, J. K., Pridgen, B. C., Yeung, S.
2021; 4 (5): e217851

- **Parents' Perspectives on Using Artificial Intelligence to Reduce Technology Interference During Early Childhood: Cross-sectional Online Survey.** *Journal of medical Internet research*
  Glassman, J., Humphreys, K., Yeung, S., Smith, M., Jauregui, A., Milstein, A., Sanders, L.
  2021; 23 (3): e19461

- **Deep learning-enabled medical computer vision.** *NPJ digital medicine*
  Esteva, A., Chou, K., Yeung, S., Naik, N., Madani, A., Mottaghi, A., Liu, Y., Topol, E., Dean, J., Socher, R.
  2021; 4 (1): 5

- **Achieving Trustworthy Biomedical Data Solutions.** *Pacific Symposium on Biocomputing. Pacific Symposium on Biocomputing*
  2021; 26: 1–13

- **Holistic 3D Human and Scene Mesh Estimation from Single View Images**
  Weng, Z., Yeung, S., IEEE COMP SOC
  IEEE COMPUTER SOC.2021: 334-343

- **Achieving Trustworthy Biomedical Data Solutions**
  WORLD SCIENTIFIC PUBL CO PTE LTD.2021: 1-13

- **GLORIA: A Multimodal Global-Local Representation Learning Framework for Label-efficient Medical Image Recognition**
  Huang, S., Shen, L., Lungren, M. P., Yeung, S., IEEE
  IEEE.2021: 3922-3931

- **DARCNN: Domain Adaptive Region-based Convolutional Neural Network for Unsupervised Instance Segmentation in Biomedical Images**
  Hsu, J., Chiu, W., Yeung, S., IEEE COMP SOC
  IEEE COMPUTER SOC.2021: 1003-1012

- **Unsupervised Discovery of the Long-Tail in Instance Segmentation Using Hierarchical Self-Supervision**
  Weng, Z., Ogut, M., Limonchik, S., Yeung, S., IEEE COMP SOC
  IEEE COMPUTER SOC.2021: 2603-2612

- **Automatic detection of hand hygiene using computer vision technology.** *Journal of the American Medical Informatics Association : JAMIA*
  2020

- **Ethical and Legal Aspects of Ambient Intelligence in Hospitals.** *JAMA*
  Gerke, S. n., Yeung, S. n., Cohen, I. G.
  2020

- **Using Computer Vision to Automate Hand Detection and Tracking of Surgeon Movements in Videos of Open Surgery.** *AMIA ... Annual Symposium proceedings. AMIA Symposium*
  2020; 2020: 1373-1382

- **A computer vision system for deep learning-based detection of patient mobilization activities in the ICU.** *NPJ digital medicine*
  2019; 2: 11

- **A computer vision system for deep learning-based detection of patient mobilization activities in the ICU** *NPJ DIGITAL MEDICINE*
  2019; 2

- **Every Moment Counts: Dense Detailed Labeling of Actions in Complex Videos** *INTERNATIONAL JOURNAL OF COMPUTER VISION*
  Yeung, S., Russakovsky, O., Jin, N., Andriluka, M., Mori, G., Li Fei-Fei
  2018; 126 (2-4): 375–89
• Scaling Human-Object Interaction Recognition through Zero-Shot Learning
  Shen, L., Yeung, S., Hoffman, J., Mori, G., Li Fei-Fei, IEEE
  IEEE.2018: 1568–76

• Temporal Modular Networks for Retrieving Complex Compositional Activities in Videos
  European Conference on Computer Vision
  Liu, B., Yeung, S., Chou, E., Huang, D., Fei-Fei, L., Niebles, J.
  2018: 569–86

• Neural Graph Matching Networks for Fewshot 3D Action Recognition
  Guo, M., Chou, E., Huang, D., Song, S., Yeung, S., Li Fei-Fei, Ferrari, Hebert, M., Sminchisescu, C., Weiss, Y.
  SPRINGER INTERNATIONAL PUBLISHING AG.2018: 673-689

• Dynamic Task Prioritization for Multitask Learning
  Guo, M., Haque, A., Huang, D., Yeung, S., Li Fei-Fei, Ferrari, Hebert, M., Sminchisescu, C., Weiss, Y.
  SPRINGER INTERNATIONAL PUBLISHING AG.2018: 282-299

• 3D Point Cloud-Based Visual Prediction of ICU Mobility Care Activities
  Machine Learning in Healthcare
  Liu, B., Guo, M., Chou, E., Mehra, R., Yeung, S., Downing, N. L., Salipur, F., Jopling, J., Campbell, B., Deru, K., Beninati, W., Milstein, A., Fei-Fei, et al
  2018

• Computer Vision-based Descriptive Analytics of Seniors' Daily Activities for Long-term Health Monitoring
  Machine Learning in Healthcare
  2018

• Dynamic Task Prioritization for Multitask Learning
  European Conference on Computer Vision
  Guo, M., Haque, A., Huang, D., Yeung, S., Fei-Fei, L.
  2018

• Neural Graph Matching Networks for Fewshot 3D Action Recognition
  European Conference on Computer Vision
  Guo, M., Chou, E., Song, S., Huang, D., Yeung, S., Fei-Fei, L.
  2018

• Bedside Computer Vision - Moving Artificial Intelligence from Driver Assistance to Patient Safety.
  The New England journal of medicine
  2018; 378 (14): 1271–73

• Tool Detection and Operative Skill Assessment in Surgical Videos Using Region-Based Convolutional Neural Networks
  IEEE.2018: 691–99

• Learning to Learn from Noisy Web Videos
  Yeung, S., Ramanathan, V., Russakovsky, O., Shen, L., Mori, G., Li Fei-Fei, IEEE
  IEEE.2017: 7455–63

• Towards Vision-Based Smart Hospitals: A System for Tracking and Monitoring Hand Hygiene Compliance
  Machine Learning in Healthcare
  2017

• Jointly Learning Energy Expenditures and Activities using Egocentric Multimodal Signals
  Nakamura, K., Yeung, S., Alahi, A., Li Fei-Fei, IEEE
  IEEE.2017: 6817–26

• Towards Viewpoint Invariant 3D Human Pose Estimation
  European Conference on Computer Vision
  Haque, A., Peng, B., Luo, Z., Alahi, A., Yeung, S., Fei-Fei, L.
  2016

• End-to-end Learning of Action Detection from Frame Glimpses in Video
  Computer Vision and Pattern Recognition
  Yeung, S., Russakovsky, O., Mori, G., Fei-Fei, L.
  2016: 2678–87
• **Towards Viewpoint Invariant 3D Human Pose Estimation**
  Haque, A., Peng, B., Luo, Z., Alahi, A., Yeung, S., Li Fei-Fei, Leibe, B., Matas, J., Sebe, N., Welling, M.
  SPRINGER INTERNATIONAL PUBLISHING AG. 2016: 160-177

• **Learning hierarchical invariant spatio-temporal features for action recognition with independent subspace analysis** IEEE Conference on Computer Vision and Pattern Recognition (CVPR)
  Le, Q. V., Zou, W. Y., Yeung, S. Y., Ng, A. Y.
  IEEE. 2011