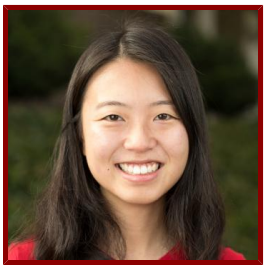
Stanford



Serena Yeung-Levy

Assistant Professor of Biomedical Data Science and, by courtesy, of Electrical Engineering and of Computer Science

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), 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

2025-26

- GenAI and French Tech: A Journey Through Technology, Ecosystem, and Regulation: OSPPARIS 60P (Win)
- Generative AI and Medicine: BMDS 281, MED 216 (Spr)

2024-25

- Advanced Topics in Computer Vision and Biomedicine: BIODS 276, CS 286 (Aut)
- Generative AI and Medicine: BIODS 216, MED 216 (Aut)

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)

STANFORD ADVISEES

Doctoral Dissertation Reader (AC)

Stefania Moroianu

Postdoctoral Faculty Sponsor

Xiaoxiao Sun, Xiaohan Wang, Yuhui Zhang

Doctoral Dissertation Advisor (AC)

James Burgess, Sanket Gupte, Marie Huynh, Eduardo Lozano Garcia, Orr Zohar

Orals Evaluator

Sanket Gupte

Master's Program Advisor

Fayez Navid Anwar, Evelyn Choi, Xander Hnasko, Julia Isaac, Matthew Kim, Aaron Lee, Isaac Lee, Wei Liu, Handong Park, Hannah Park, Juntong Shi, Elijah Song, Vikram Srinivasan, Rahul Thapa, Kaylee Xie

Doctoral Dissertation Co-Advisor (AC)

Fiona Cai, Min Sun

Doctoral (Program)

Liangyu Chen, Mark Endo, Sanket Gupte, Rebecca Hurwitz, Elana Simon, Shiye Su, Elaine Sui, Shengguang Wu

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*
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- **CryoET reveals organelle phenotypes in huntington disease patient iPSC-derived and mouse primary neurons.** *Nature communications*
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  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. G., Selig, E. R. R., Wabnitz, C. C. C., Hastie, T. J. J., Leape, J., Yeung, S., Micheli, F.
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- **Generalizable Neural Fields as Partially Observed Neural Processes**
  Gu, J., Wang, K., Yeung, S., IEEE
  IEEE COMPUTER SOC.2023: 5307-5316
- **NeMo: 3D Neural Motion 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
- **PROB: Probabilistic Objectness for Open World Object Detection**
  Zohar, O., Wang, K., Yeung, S., IEEE
  IEEE COMPUTER SOC.2023: 11444-11453
- **Using AI and computer vision to analyze technical proficiency in robotic surgery.** *Surgical endoscopy*
  Yang, J. H., Goodman, E. D., Dawes, A. J., Gahagan, J. V., Esquivel, M. M., Liebert, C. A., Kin, C., Yeung, S., Gurland, B. H.
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- **Developing medical imaging AI for emerging infectious diseases.** *Nature communications*
  Huang, S., Chaudhari, A. S., Langlotz, C. P., Shah, N., Yeung, S., Lungren, M. P.
  2022; 13 (1): 7060
- **Prostate cancer therapy personalization via multi-modal deep learning on randomized phase III clinical trials.** *NPJ digital medicine*
  Esteva, A., Feng, J., van der Wal, D., Huang, S., Simko, J. P., DeVries, S., Chen, E., Schaeffer, E. M., Morgan, T. M., Sun, Y., Ghorbani, A., Naik, N., Nathawani, et al
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- **AUTOMATED DETECTION OF ISOLATED REM SLEEP BEHAVIOR DISORDER (IRBD) DURING SINGLE NIGHT IN-LAB VIDEO-POLYSOMNOGRAPHY (PSG) USING COMPUTER VISION**
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- **Adaptation of Surgical Activity Recognition Models Across Operating Rooms**
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- **Domain Adaptive 3D Pose Augmentation for In-the-wild Human Mesh Recovery**
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- **Using deep learning to identify the recurrent laryngeal nerve during thyroidectomy.** *Scientific reports*
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- **Setting Assessment Standards for Artificial Intelligence Computer Vision Wound Annotations.** *JAMA network open*
  Jopling, J. K., Pridgen, B. C., Yeung, S.
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- **Parents' Perspectives on Using Artificial Intelligence to Reduce Technology Interference During Early Childhood: Cross-sectional Online Survey.** *Journal of medical Internet research*
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- **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.
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- **Achieving Trustworthy Biomedical Data Solutions.** *Pacific Symposium on Biocomputing. Pacific Symposium on Biocomputing*
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  2021; 26: 1–13
- **Achieving Trustworthy Biomedical Data Solutions**
  Washington, P., Yeung, S., Percha, B., Tatonetti, N., Liphardt, J., Wall, D. P.
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- **GLoRIA: A Multimodal Global-Local Representation Learning Framework for Label-efficient Medical Image Recognition**
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- **Holistic 3D Human and Scene Mesh Estimation from Single View Images**
  Weng, Z., Yeung, S., IEEE COMP SOC
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- **DARCNN: Domain Adaptive Region-based Convolutional Neural Network for Unsupervised Instance Segmentation in Biomedical Images**
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  IEEE COMPUTER SOC.2021: 1003-1012
- **Unsupervised Discovery of the Long-Tail in Instance Segmentation Using Hierarchical Self-Supervision**
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- **Ethical and Legal Aspects of Ambient Intelligence in Hospitals.** *JAMA*
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  2020
- **Using Computer Vision to Automate Hand Detection and Tracking of Surgeon Movements in Videos of Open Surgery.** *AMIA ... Annual Symposium proceedings. AMIA Symposium*
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- **Scaling Human-Object Interaction Recognition through Zero-Shot Learning**
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- **Neural Graph Matching Networks for Fewshot 3D Action Recognition**
  Guo, M., Chou, E., Huang, D., Song, S., Yeung, S., Li Fei-Fei
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- **Dynamic Task Prioritization for Multitask Learning**
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- **Temporal Modular Networks for Retrieving Complex Compositional Activities in Videos** *European Conference on Computer Vision*
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- **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
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- **Computer Vision-based Descriptive Analytics of Seniors' Daily Activities for Long-term Health Monitoring** *Machine Learning in Healthcare*
  Hsieh, J., Luo, Z., Balachandar, N., Yeung, S., Pusiol, G., Luxenberg, J., Li, G., Li, L., Downing, N. L., Milstein, A., Fei-Fei, L.
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  Guo, M., Haque, A., Huang, D., Yeung, S., Fei-Fei, L.
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- **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*
  Yeung, S. n., Downing, N. L., Fei-Fei, L. n., Milstein, A. n.
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- **Tool Detection and Operative Skill Assessment in Surgical Videos Using Region-Based Convolutional Neural Networks**
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- **Learning to Learn from Noisy Web Videos**
  Yeung, S., Ramanathan, V., Russakovsky, O., Shen, L., Mori, G., Li Fei-Fei, IEEE
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- **Towards Vision-Based Smart Hospitals: A System for Tracking and Monitoring Hand Hygiene Compliance** *Machine Learning in Healthcare*
  Haque, A., Guo, M., Alahi, A., Yeung, S., Luo, Z., Rege, A., Jopling, J., Downing, N. L., Beninati, W., Singh, A., Platchek, T., Milstein, A., Fei-Fei, et al
  2017
- **Jointly Learning Energy Expenditures and Activities using Egocentric Multimodal Signals**
  Nakamura, K., Yeung, S., Alahi, A., Li Fei-Fei, IEEE
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- **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.
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- **Towards Viewpoint Invariant 3D Human Pose Estimation**
  Haque, A., Peng, B., Luo, Z., Alahi, A., Yeung, S., Li Fei-Fei
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- **Towards Viewpoint Invariant 3D Human Pose Estimation** *European Conference on Computer Vision*
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- **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