Stanford

# Juan Carlos Niebles

Sr Research Engineer, Computer Science


**CONTACT INFORMATION**

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## Bio

### BIO

Juan Carlos Niebles received an Engineering degree in Electronics from Universidad del Norte (Colombia) in 2002, an M.Sc. degree in Electrical and Computer Engineering from University of Illinois at Urbana-Champaign in 2007, and a Ph.D. degree in Electrical Engineering from Princeton University in 2011. He is Research Director at Salesforce and Adjunct Professor of Computer Science at Stanford since 2021. He is co-Director of the Stanford Vision and Learning Lab. Before that, he was Associate Director of Research at the Stanford-Toyota Center for AI Research and a Senior Research Scientist at the Stanford AI Lab between 2015 and 2021. He was also an Associate Professor of Electrical and Electronic Engineering in Universidad del Norte (Colombia) between 2011 and 2019. His research interests are in computer vision and machine learning, with a focus on visual recognition and understanding of human actions and activities, objects, scenes, and events. He serves as Area Chair for the top computer vision conferences CVPR and ICCV, as well as Associate Editor for IEEE TPAMI. He is also a member of the AI Index Steering Committee and is the Curriculum Director for Stanford-AI4ALL. He is a recipient of a Google Faculty Research award (2015), the Microsoft Research Faculty Fellowship (2012), a Google Research award (2011) and a Fulbright Fellowship (2005).

### ACADEMIC APPOINTMENTS

- Sr Research Engineer, Computer Science

### HONORS AND AWARDS

- Faculty Research Award, Google (2015)
- Senior Member, IEEE (2015)
- Faculty Fellow, Microsoft Research (2012)
- Research Award, Google (2011)
- Fulbright PhD Fellowship, Fulbright-Colciencias-DNP (2005)

### BOARDS, ADVISORY COMMITTEES, PROFESSIONAL ORGANIZATIONS

- Steering Committee, AI Index (2018 - present)
- Associate Director of Research, Stanford AI Lab-Toyota Center for AI Research (2015 - present)
- Senior Member, IEEE (2015 - present)

- Member, IEEE Computer Society (2014 - present)
- Member, IEEE (2007 - present)

### PROFESSIONAL EDUCATION

- Ph.D., Princeton University , Electrical Engineering (2011)
- M.A., Princeton University , Electrical Engineering (2009)
- M.Sc., University of Illinois at Urbana-Champaign , Electrical and Computer Engineering (2007)
- Engineer, Universidad del Norte , Electronics Engineering (2002)

### LINKS

- Personal Academic Website: http://www.niebles.net
- Stanford Vision and Learning Lab: http://svl.stanford.edu/
- Google Scholar Profile: http://scholar.google.com/citations?user=hqNhUCYAAAAJ

## Research & Scholarship

### CURRENT RESEARCH AND SCHOLARLY INTERESTS

My research work is in computer vision. The goal of my research is to enable computers and robots to perceive the visual world by developing novel computer vision algorithms for automatic analysis of images and videos. From the scientific point of view, we tackle fundamental open problems in computer vision research related to the visual recognition and understanding of human actions and activities, objects, scenes, and events. From the application perspective, we develop systems that solve practical world problems by introducing cutting-edge computer vision technologies into new application domains.

## Teaching

### COURSES

**2023-24**

- Computer Vision: Foundations and Applications: CS 131 (Win)

**2022-23**

- Computer Vision: Foundations and Applications: CS 131 (Aut)

**2021-22**

- Computer Vision: Foundations and Applications: CS 131 (Aut)

**2020-21**

- Computer Vision: Foundations and Applications: CS 131 (Aut)

### STANFORD ADVISEES

**Doctoral Dissertation Reader (NonAC)**

James Hong

**Doctoral (Program)**

Cristobal Eyzaguirre

# Publications

## PUBLICATIONS

- **Quantifying Parkinson's disease motor severity under uncertainty using MDS-UPDRS videos.** *Medical image analysis*
  Lu, M., Zhao, Q., Poston, K. L., Sullivan, E. V., Pfefferbaum, A., Shahid, M., Katz, M., Kouhsari, L. M., Schulman, K., Milstein, A., Niebles, J. C., Henderson, V. W., Fei-Fei, et al
  2021; 73: 102179

- **Metadata Normalization.** *Proceedings. IEEE Computer Society Conference on Computer Vision and Pattern Recognition*
  Lu, M., Zhao, Q., Zhang, J., Pohl, K. M., Fei-Fei, L., Niebles, J. C., Adeli, E.
  2021; 2021: 10912-10922

- **CoCon: Cooperative-Contrastive Learning**
  Rai, N., Adeli, E., Lee, K., Gaidon, A., Niebles, J., IEEE Comp Soc
  IEEE COMPUTER SOC.2021: 3379-3388

- **Home Action Genome: Cooperative Compositional Action Understanding**
  Rai, N., Chen, H., Ji, J., Desai, R., Kozuka, K., Ishizaka, S., Adeli, E., Niebles, J., IEEE COMP SOC
  IEEE COMPUTER SOC.2021: 11179-11188

- **Representation Learning with Statistical Independence to Mitigate Bias.** *IEEE Winter Conference on Applications of Computer Vision. IEEE Winter Conference on Applications of Computer Vision*
  Adeli, E., Zhao, Q., Pfefferbaum, A., Sullivan, E. V., Fei-Fei, L., Niebles, J. C., Pohl, K. M.
  2021; 2021: 2512-2522

- **Vision-based Estimation of MDS-UPDRS Gait Scores for Assessing Parkinson's Disease Motor Severity.** *Medical image computing and computer-assisted intervention : MICCAI ... International Conference on Medical Image Computing and Computer-Assisted Intervention*
  Lu, M., Poston, K., Pfefferbaum, A., Sullivan, E. V., Fei-Fei, L., Pohl, K. M., Niebles, J. C., Adeli, E.
  2020; 12263: 637–47

- **Socially and Contextually Aware Human Motion and Pose Forecasting** *IEEE ROBOTICS AND AUTOMATION LETTERS*
  Adeli, V., Adeli, E., Reid, I., Niebles, J., Rezatofighi, H.
  2020; 5 (4): 6033–40

- **Explaining VQA predictions using visual grounding and a knowledge base** *IMAGE AND VISION COMPUTING*
  Riquelme, F., De Goyeneche, A., Zhang, Y., Niebles, J., Soto, A.
  2020; 101

- **Segmenting the Future** *IEEE ROBOTICS AND AUTOMATION LETTERS*
  Chiu, H., Adeli, E., Niebles, J.
  2020; 5 (3): 4202–9

- **Spatiotemporal Relationship Reasoning for Pedestrian Intent Prediction** *IEEE ROBOTICS AND AUTOMATION LETTERS*
  Liu, B., Adeli, E., Cao, Z., Lee, K., Shenoi, A., Gaidon, A., Niebles, J.
  2020; 5 (2): 3485–92

- **Disentangling Human Dynamics for Pedestrian Locomotion Forecasting with Noisy Supervision**
  Mangalam, K., Adeli, E., Lee, K., Gaidon, A., Niebles, J., IEEE Comp Soc
  IEEE COMPUTER SOC.2020: 2773–82

- **Motion Reasoning for Goal-Based Imitation Learning**
  Huang, D., Chao, Y., Paxton, C., Deng, X., Li Fei-Fei, Niebles, J., Garg, A., Fox, D., IEEE
  IEEE.2020: 4878-4884

- **Adversarial Cross-Domain Action Recognition with Co-Attention**
  Pan, B., Cao, Z., Adeli, E., Niebles, J., Assoc Advancement Artificial Intelligence
  ASSOC ADVANCEMENT ARTIFICIAL INTELLIGENCE.2020: 11815-11822

- **Action-Agnostic Human Pose Forecasting**

Chiu, H., Adeli, E., Wang, B., Huang, D., Niebles, J., IEEE
IEEE.2019: 1423–32

- **Learning Temporal Action ProposalsWith Fewer Labels**
  Ji, J., Cao, K., Niebles, J., IEEE
  IEEE.2019: 7072–81
- **Imitation Learning for Human Pose Prediction**
  Wang, B., Adeli, E., Chiu, H., Huang, D., Niebles, J., IEEE
  IEEE.2019: 7123–32
- **Continuous Relaxation of Symbolic Planner for One-Shot Imitation Learning**
  Huang, D., Xu, D., Zhu, Y., Garg, A., Savarese, S., Fei-Fei, L., Niebles, J., IEEE
  IEEE.2019: 2635–42
- **Peeking into the Future: Predicting Future Person Activities and Locations in Videos**
  Liang, J., Jiang, L., Niebles, J., Hauptmann, A., Li Fei-Fei, IEEE Comp Soc
  IEEE COMPUTER SOC.2019: 5718–27
- **(DTW)-T-3: Discriminative Differentiable Dynamic Time Warping for Weakly Supervised Action Alignment and Segmentation**
  Chang, C., Huang, D., Sui, Y., Li Fei-Fei, Niebles, J., IEEE Comp Soc
  IEEE COMPUTER SOC.2019: 3541–50
- **Peeking into the Future: Predicting Future Person Activities and Locations in Videos**
  Liang, J., Jiang, L., Niebles, J., Hauptmann, A., Li Fei-Fei, IEEE
  IEEE.2019: 2960–63
- **Neural Task Graphs: Generalizing to Unseen Tasks from a Single Video Demonstration**
  Huang, D., Nair, S., Xu, D., Zhu, Y., Garg, A., Li Fei-Fei, Savarese, S., Niebles, J., IEEE Comp Soc
  IEEE.2019: 8557–66
- **Interpretable Visual Question Answering by Visual Grounding from Attention Supervision Mining**
  Zhang, Y., Niebles, J., Soto, A., IEEE
  IEEE.2019: 349–57
- **Learning to Decompose and Disentangle Representations for Video Prediction**
  Hsieh, J., Liu, B., Huang, D., Fei-Fei, L., Niebles, J., Bengio, S., Wallach, H., Larochelle, H., Grauman, K., CesaBianchi, N., Garnett, R.
  NEURAL INFORMATION PROCESSING SYSTEMS (NIPS).2018
- **Finding "It": Weakly-Supervised Reference-Aware Visual Grounding in Instructional Videos**
  Huang, D., Buch, S., Dery, L., Garg, A., Li Fei-Fei, Niebles, J., IEEE
  IEEE.2018: 5948–57
- **What Makes a Video a Video: Analyzing Temporal Information in Video Understanding Models and Datasets**
  Huang, D., Ramanathan, V., Mahajan, D., Torresani, L., Paluri, M., Li Fei-Fei, Niebles, J., IEEE
  IEEE.2018: 7366–75
- **Sparse composition of body poses and atomic actions for human activity recognition in RGB-D videos** *IMAGE AND VISION COMPUTING*
  Lillo, I., Niebles, J., Soto, A.
  2017; 59: 63–75
- **Risky Region Localization with Point Supervision**
  Kozuka, K., Niebles, J., IEEE
  IEEE.2017: 246–53
- **Dense-Captioning Events in Videos**
  Krishna, R., Hata, K., Ren, F., Fei-Fei, L., Niebles, J., IEEE
  IEEE.2017: 706–15
- **Visual Forecasting by Imitating Dynamics in Natural Sequences**
  Zeng, K., Shen, W. B., Huang, D., Sun, M., Niebles, J., IEEE

IEEE.2017: 3018–27

- **Unsupervised Visual-Linguistic Reference Resolution in Instructional Videos**
  Huang, D., Lim, J. J., Fei-Fei, L., Niebles, J., IEEE
  IEEE.2017: 1032–41
- **Agent-Centric Risk Assessment: Accident Anticipation and Risky Region Localization**
  Zeng, K., Chou, S., Chan, F., Niebles, J., Sun, M., IEEE
  IEEE.2017: 1330–38
- **A Hierarchical Pose-Based Approach to Complex Action Understanding Using Dictionaries of Actionlets and Motion Poselets**
  Lillo, I., Niebles, J., Soto, A., IEEE
  IEEE.2016: 1981–90
- **Title Generation for User Generated Videos**
  Zeng, K., Chen, T., Niebles, J., Sun, M., Leibe, B., Matas, J., Sebe, N., Welling, M.
  SPRINGER INTERNATIONAL PUBLISHING AG.2016: 609–25
- **DAPs: Deep Action Proposals for Action Understanding**
  Escorcia, V., Heilbron, F., Niebles, J., Ghanem, B., Leibe, B., Matas, J., Sebe, N., Welling, M.
  SPRINGER INTERNATIONAL PUBLISHING AG.2016: 768–84
- **Connectionist Temporal Modeling for Weakly Supervised Action Labeling**
  Huang, D., Li Fei-Fei, Niebles, J., Leibe, B., Matas, J., Sebe, N., Welling, M.
  SPRINGER INTERNATIONAL PUBLISHING AG.2016: 137–53
- **Fast Temporal Activity Proposals for Efficient Detection of Human Actions in Untrimmed Videos**
  Heilbron, F., Niebles, J., Ghanem, B., IEEE
  IEEE.2016: 1914–23
- **Modeling Temporal Structure of Decomposable Motion Segments for Activity Classification** *11th European Conference on Computer Vision*
  Niebles, J. C., Chen, C., Li Fei-Fei, F. F.
  SPRINGER-VERLAG BERLIN.2010: 392–405