

# Tianmin Shu

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## CONTACT INFORMATION

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## EDUCATION

**University of California, Los Angeles**, Los Angeles, CA, USA Expected: 06/2019

*Ph.D. student in Statistics*

- Advisor: Song-Chun Zhu
- Areas of focus: social scene understanding, human-robot interaction, computational cognitive science

**Fudan University**, Shanghai, China 09/2010 - 06/2014

*B.S. in Electronic Engineering*

## RESEARCH EXPERIENCE

**Center for Vision, Cognition, Learning, and Autonomy, UCLA** 09/2014 - present  
*Graduate Student Researcher* *Advisor: Song-Chun Zhu*

- Social scene understanding: structured models of social activities in videos
- Human-robot interaction: imitation and reinforcement learning
- Computational cognitive science: modeling human social perception

**Facebook AI Research**, Menlo Park, CA, USA 06/2018 - 09/2018  
*Research Intern* *Mentor: Yuandong Tian*

- Multi-agent reinforcement learning

**Salesforce Research, MetaMind Group**, Palo Alto, CA, USA 06/2017 - 09/2017  
*Research Intern* *Mentor: Caiming Xiong, Richard Socher*

- Multi-agent and hierarchical reinforcement learning

## PUBLICATIONS

(\* indicates equal contribution)

### Peer-reviewed Journal Articles

D. Xie, **T. Shu**, S. Todorovic and S.-C. Zhu. Learning and Inferring “Dark Matter” and Predicting Human Intents and Trajectories in Videos. *IEEE Trans. on Pattern Analysis and Machine Intelligence (TPAMI)*, 40(7): 1639-1652, 2018.

**T. Shu\***, Y. Peng\*, L. Fan, H. Lu and S.-C. Zhu. Perception of Human Interaction Based on Motion Trajectories: from Aerial Videos to Decontextualized Animations. *Topics in Cognitive Science (TopiCS)*, 10(1): 225 - 241, 2018.

### Peer-reviewed Conference Papers

**T. Shu**, Y. Peng, H. Lu and S.-C. Zhu. Partitioning the Perception of Physical and Social Events Within a Unified Psychological Space. *41th Annual Meeting of the Cognitive Science Society (CogSci)*, 2019. (**Oral presentation, acceptance rate: 205/810 = 25.3%**)

**T. Shu**, Y. Tian. M<sup>3</sup>RL: Mind-aware Multi-agent Management Reinforcement Learning. *7th International Conference on Learning Representations (ICLR)*, 2019. (**Acceptance rate: 525 / 1591 = 33%**)

P. Wei, Y. Liu, **T. Shu**, N. Zheng and S.-C. Zhu. Where and Why Are They Looking? Jointly

Inferring Human Attention and Intentions in Complex Tasks. *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2018. (**Acceptance rate: 979/3303 = 30%**)

**T. Shu**, C. Xiong and R. Socher. Hierarchical and Interpretable Skill Acquisition in Multi-task Reinforcement Learning. *6th International Conference on Learning Representations (ICLR)*, 2018. (**Acceptance rate: 337 / 935 = 36%**)

**T. Shu\***, Y. Peng\*, L. Fan, H. Lu and S.-C. Zhu. Inferring Human Interaction from Motion Trajectories in Aerial Videos. *39th Annual Meeting of the Cognitive Science Society (CogSci)*, 2017. (**Oral presentation, acceptance rate: 255/873 = 29%**) **Computational Modeling Prize**

**T. Shu**, S. Todorovic and S.-C. Zhu. CERN: Confidence-Energy Recurrent Network for Group Activity Recognition. *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2017. (**Acceptance rate: 783/2680 = 29%**)

**T. Shu**, X. Gao, M. S. Ryoo and S.-C. Zhu. Learning Social Affordance Grammar from Videos: Transferring Human Interactions to Human-Robot Interactions. *IEEE International Conference on Robotics and Automation (ICRA)*, 2017. (**Acceptance rate: 939/2289=41%**)

**T. Shu\***, S. Thurman\*, D. Chen, S.-C. Zhu and H. Lu. Critical Features of Joint Actions that Signal Human Interaction. *38th Annual Meeting of the Cognitive Science Society (CogSci)*, 2016.

**T. Shu**, M. S. Ryoo and S.-C. Zhu. Learning Social Affordance for Human-Robot Interaction. *25th International Joint Conference on Artificial Intelligence (IJCAI)*, 2016. (**Acceptance rate: 558/2294= 24%**)

**T. Shu**, D. Xie, B. Rothrock, S. Todorovic and S.-C. Zhu. Joint Inference of Groups, Events and Human Roles in Aerial Videos. *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2015. (**Oral presentation, acceptance rate: 71/2123 = 3.3%**)

MEDIA COVERAGE “VRKitchen: An interactive virtual environment to train and test AI agents.” *Tech Xplore*. Mar. 27, 2019

“Robots taught to work alongside humans by giving high fives.” *New Scientist*. Apr. 27, 2017

INVITED TALKS “Towards a Better Agent Modeling for Multi-agent Reinforcement Learning.” *CLVR Speaker Series, University of Southern California*, Nov. 29, 2019

“Social Perception on Heider-Simmel Animations.” *The Annual Meeting of Multidisciplinary University Initiative (MURI), White Mountain, NH*, Sep. 26, 2018

“Modeling Human Social Interactions.” *The Annual Meeting of Multidisciplinary University Initiative (MURI), UCLA*, Aug. 23, 2017

“Inferring Human Interactions.” *3rd Vision Meets Cognition Workshop in Conjunction with CVPR 2017, Honolulu, HI*, Jul. 21, 2017

SELECTED	Computational Modeling Prize (Perception/Action Category), Cognitive Science Society	2017
HONORS AND	Outstanding Bachelor Thesis of Fudan University	2014
AWARDS	Shanghai Outstanding Graduate Award, Shanghai Municipal Education Commission, China	2014
	National Scholarship of China, Ministry of Education, China	2013

PROFESSIONAL  
SERVICE

**Conference Reviewer:**

- CVPR (2017-2019)
- ICCV (2017,2019)
- ECCV (2018)
- ICRA (2019)
- IROS (2017,2019)
- BMVC (2019)
- ACCV (2019)
- PRCV (2019)

**Journal Reviewer:**

- IEEE Transactions on Image Processing (TIP)
- Quarterly Journal of Experimental Psychology
- Computers in Industry

**Workshop Committee:**

- ICML 2018 Workshop on Theoretical Foundations and Applications of Deep Generative Models
- 3rd Vision Meets Cognition Workshop in Conjunction with CVPR 2017

**Department and University Services:**

- Student Reviewer, UCLA Computer Science Graduate Admission (2017-2019)
- Grad Student Consultant, the American Statistical Association (ASA) DataFest (2015)

TEACHING  
EXPERIENCE

**University of California, Los Angeles, Department of Statistics**

*STATS 232C: Cognitive Artificial Intelligence*

Spring 2018

- Special Reader

*STATS 102A: Introduction to Computational Statistics with R*

Fall 2017, Winter 2018

- Teaching Assistant

*STATS 232A: Statistical Modeling and Learning in Vision and Cognition*

Winter 2016

- Special Reader

*STATS 130: Getting up to Speed with SPSS, Stata, SAS, and R*

Spring 2015

- Teaching Assistant

MENTORING

**Undergraduate Research:**

- Qingyi Zhao (Master in Computer Science, UCLA)
- Adam Brownell
- Xiaofeng Gao (currently Ph.D. student in Statistics at UCLA)
- Xiaopei Zhang (Master in Electrical Engineering, UCLA)
- Peimeng Sui (Master in Data Science, NYU)

**Master Research:**

- Yixin Chen (currently Ph.D. student in Statistics at UCLA)