Caiming Xiong

Contact Information

Salesforce Inc.
575 High st, Palo Alto, .
CA, 94301, USA

Research Interest

Deep Learning, Natural Language Processing, Conversational AI, Computer Vision, Speech, Recommendation, Reinforcement Learning.

Education

The State University of New York at Buffalo
Ph.D., Computer Science and Engineering, 2014,
Huazhong University of Science and Technology, China
M.S., Computer Science and Technology, 2007
B.S., Computer Science and Technology, 2005

Experience

Salesforce 03/2019 to present
Senior Director of Research, AI

Salesforce 08/2017 to 03/2019
Director of Research, AI
- Lead and develop AI products in Conversational AI, Neural language interface, Vision, Speech and Recommendation, start from research publication, project incubation and finally deliver the model to production.
- Develop the long term vision for DL/ML research and AI for good.

Salesforce 04/2016 to 08/2017
Lead Research Scientist
- Develop the long term vision for DL/ML in natural language processing, speech and computer vision.
- Propose and implement novel AI models, and publish the work in top-tier AI conference.
- Lead the several teams and build AI systems such as conversational system, visual system, speech recognition and recommendation system.

Metamind (*acquired by Salesforce.com*) 09/2015 to 04/2016
Senior Researcher
- Developed multimodal deep learning for image/text question-answering, caption ranking
- Developed new deep learning model for satellite image segmentation and object detection
- Designed and implemented 3D Convolutional Neural Network for medical image diagnosis

University of California, Los Angeles(UCLA) 06/2014 to 08/2015
Postdoctoral Researcher
- Video understanding and interactive robot learning
- Joint human pose estimation and action recognition in video
- Deep learning for visual question-answering

Honeywell ACS labs 06/2012 to 08/2012
Research Intern
- Research in latent topic discovery for domain adaptation

Publications

(Peer Reviewed) A. Asai, K. Hashimoto, H. Hajishirzi, R. Socher, C. Xiong. Learning to Retrieve Reasoning Paths over Wikipedia Graph for Question Answering. *International Conference on Learning Representations (ICLR), 2020.*

H. Wang, N. Keskar, C. Xiong, R. Socher. Assessing Local Generalization Capability in Deep Models. *The 23rd International Conference on Artificial Intelligence and Statistics (AISTATS 2020).*

H. Li, Z. Wu, C. Zhu, C. Xiong, R. Socher, L. Davis. Learning from Noisy Anchors for One-stage Object Detection. *IEEE Conference on Computer Vision and Pattern Recognition (CVPR 2020).*

N. Keskar, B. McCann, L. R. Varshney, C. Xiong, R. Socher. CTRL: A Conditional Transformer Language Model for Controllable Generation.

A. Trott, S. Zheng, C. Xiong, R. Socher. Keeping Your Distance: Solving Sparse Reward Tasks Using Self-Balancing Shaped Rewards. *Thirty-third Conference on Neural Information Processing Systems (NeurIPS 2019).*

Z. Wu, C. Xiong, Y. Jiang, L. Davis. LiteEval: A Coarse-to-Fine Framework for Resource Efficient Video Recognition. *Thirty-third Conference on Neural Information Processing Systems (NeurIPS 2019).*

W. Kryscinski, C. Xiong, R. Socher. The State of Text Summarization: A Critical Evaluation. *2019 Conference on Empirical Methods in Natural Language Processing and 9th International Joint Conference on Natural Language Processing (EMNLP-IJCNLP 2019).*

M. Gao, L. Davis, R. Socher, C. Xiong. WSLLN: Weakly Supervised Natural Language Localization Networks. *2019 Conference on Empirical Methods in Natural Language Processing and 9th International Joint Conference on Natural Language Processing (EMNLP-IJCNLP 2019).*

R. Zhang, T. Yu, H. Er, S. Shim, E. Xue, X. Lin, T. Shi, C. Xiong, R. Socher, D. Radev. Editing-based SQL Query Generation for Cross-Domain Context-Dependent Questions. *2019 Conference on Empirical Methods in Natural Language Processing and 9th International Joint Conference on Natural Language Processing (EMNLP-IJCNLP 2019).*

N. Rajani, B. McCann, C. Xiong, R. Socher. Explain Yourself! Leveraging Language Models for Commonsense Reasoning. *Association for Computational Linguistics 2019 Conference (ACL 2019).*

C. Wu, A. Madotto, E. Hosseini-Asl, C. Xiong, R. Socher, P. Fung. Transferable Multi-Domain State Generator for Task-Oriented Dialogue Systems. *Association for Computational Linguistics 2019 Conference (ACL 2019). (Outstanding Paper Award)*

X. Li, Y. Zhou, T. Wu, C. Xiong, R. Socher. Learn to Grow: A Continual Structure Learning Framework for Catastrophic Forgetting,. *International Conference on Machine Learning (ICML), 2019.*

H. Liu, R. Socher, C. Xiong. Taming MAML: Control variates for unbiased meta-reinforcement learning gradient estimation. *International Conference on Machine Learning (ICML), 2019.*

H. Wang, S. Zheng, C. Xiong, R. Socher. On the Generalization Gap in Reparameterizable Reinforcement Learning. *International Conference on Machine Learning (ICML), 2019.*

C.Y. Ma, Z. Wu, G. AlRegib, C. Xiong, Z. Kira. The Regretful Agent: Heuristic-Aided Navigation through Progress Estimation. *IEEE Conference on Computer Vision and Pattern Recognition (CVPR 2019).*

Z. Wu, C. Xiong, C.Y. Ma, R. Socher, L. Davis. AdaFrame: Adaptive Frame Selection for Fast Video Recognition. *IEEE Conference on Computer Vision and Pattern Recognition (CVPR 2019).*

C. Wu, R. Socher, C. Xiong. Global-to -local Memory Pointer Networks for Task-Oriented Dialogue. *International Conference on Learning Representations (ICLR), 2019.*

C.Y. Ma, J. Lu, Z. Wu, G. AlRegib, Z. Kira, R. Socher, C. Xiong. Self-Monitoring Navigation Agent via Auxiliary Progress Estimation. *International Conference on Learning Representations (ICLR), 2019.*

V. Zhong, C. Xiong, N, Keskar, R. Socher. Coarse-grain Fine-grain Coattention Network for Multi-evidence Question Answering. *International Conference on Learning Representations (ICLR), 2019.*

H. Liu, A. Trott, C. Xiong, R. Socher. Competitive experience replay. *International Conference on Learning Representations (ICLR), 2019.*

E. Hosseini-Asl, Y. Zhou, C. Xiong, R. Socher. Augmented Cyclic Adversarial Learning for Low Resource Domain Adaptation. *International Conference on Learning Representations (ICLR), 2019.*

A. Gotmare, N. Keskar, C. Xiong, R. Socher. A Closer Look at Deep Learning Heuristics: Learning rate restarts, Warmup and Distillation. *International Conference on Learning Representations (ICLR), 2019.*

B. Li, C. Xiong, T. Wu, Y. Zhou, L. Zhang, R. Chu. Neural Abstract Style Transfer for Chinese Traditional Painting. *Asian Conference on Computer Vision (ACCV 2019).*

X. Lin, R. Socher, C. Xiong. Multi-Hop Knowledge Graph Reasoning with Reward Shaping. *The 2018 Conference on Empirical Methods on Natural Language Processing (EMNLP 2018).*

W. Kryściński, R. Paulus, C. Xiong, R. Socher. Improving Abstraction in Text Summarization. *The 2018 Conference on Empirical Methods on Natural Language Processing (EMNLP 2018).*

L. Zhou, Y. Zhou, J. J. Corso, R. Socher, C. Xiong. End-to-End Dense Video Captioning with Masked Transformer. *IEEE Conference on Computer Vision and Pattern Recognition (CVPR 2018).*

S. Min, V. Zhong, R. Socher, C. Xiong. Efficient and Robust Question Answering from Minimal Context over Documents. *Association for Computational Linguistics 2018 Conference (ACL 2018).*

V. Zhong, C. Xiong, R. Socher. Global-Locally Self-Attentive Encoder for Dialogue State Tracking. *Association for Computational Linguistics 2018 Conference (ACL 2018).*

C. Xiong, V. Zhong, R. Socher. DCN+: Mixed Objective and Deep Residual Coattention for Question Answering. *International Conference on Learning Representations (ICLR), 2018.*

J. Gu, J. Bradbury, C. Xiong, R. Socher. Non-Autoregressive Neural Machine Translation. *International Conference on Learning Representations (ICLR), 2018.*

T. Shu, C. Xiong, R. Socher. Hierarchical and Interpretable Skill Acquisition in Multi-task Reinforcement Learning. *International Conference on Learning Representations (ICLR), 2018.*

A. Trott, C. Xiong, R. Socher. Interpretable Counting for Visual Question Answering. *International Conference on Learning Representations (ICLR), 2018.*

R. Paulus, C. Xiong, R. Socher. A Deep Reinforced Model for Abstractive Summarization. *International Conference on Learning Representations (ICLR), 2018.*

V. Zhong, C. Xiong, R. Socher. Seq2SQL: Generating Structured Queries from Natural Language using Reinforcement Learning. *https://arxiv.org/abs/1709.00103*

B. McCann, J. Bradbury, C. Xiong, R. Socher. Learned in Translation: Contextualized Word Vectors. *Advances in Neural Information Processing Systems (NIPS 2017).*

K. Hashimoto, C. Xiong, Y. Tsuruoka and R. Socher. A Joint Many-Task Model: Growing a Neural Network for Multiple NLP Tasks. *The 2017 Conference on Empirical Methods on Natural Language Processing (EMNLP 2017).*

C. Xiong, J. Lu, D. Parikh and R. Socher. Knowing When to Look: Adaptive Attention via A Visual Sentinel for Image Captioning. *IEEE Conference on Computer Vision and Pattern Recognition (CVPR 2017).*

C. Xiong, V. Zhong and R. Socher. Dynamic Coattention Networks For Question Answering. *International Conference on Learning Representations (ICLR), 2017.*

J. Bradbury, S. Merity, C. Xiong and R. Socher. Quasi-Recurrent Neural Networks. *International Conference on Learning Representations (ICLR), 2017.*

S. Merity, C. Xiong, James Bradbury and R. Socher. Pointer Sentinel Mixture Models. *International Conference on Learning Representations (ICLR), 2017.*

S. Longpre, S. Pradhan, C. Xiong and R. Socher. A Way out of the Odyssey: Analyzing and Combining Recent Insights for LSTMs. *arxiv.org/abs/1611.05104.*

C. Xiong ,D. M. Johnson and J. J. Corso. Active Clustering with Model-Based Uncertainty Reduction. *IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI), 2016.*

C. Xiong, S. Merity and R. Socher. Dynamic Memory Networks for Visual and Textual Question Answering. *International Conference on Machine Learning (ICML), 2016.*

B. Li, T.F. Wu, C. Xiong and S.C. Zhu. Car Fluent Recognition with Spatial-Temporal And-Or Models. *In Proceedings of IEEE Computer Vision and Pattern Recognition (CVPR), 2016. (Oral Presentation)*

C. Xiong, N. Shukla, W. Xiong, and S.C. Zhu. Robot Learning with a Spatial, Temporal, and Causal And-Or Graph. *In Proceedings of IEEE International Conference on Robotics and Automation (ICRA), 2016. (Oral Presentation)*

D. M. Johnson, C. Xiong and J. J. Corso. Semi-Supervised Nonlinear Distance Metric Learning via Forests of Max-Margin Cluster Hierarchies. *IEEE Transactions on Knowledge and Data Engineering (TKDE), doi:10.1109/TKDE.2015.2507130*

G. Chen, Haiying Zhang, C. Xiong. Maximum Margin Dirichlet Process Mixtures for Clustering. *In Proceedings of AAAI Conference on Artificial Intelligence (AAAI), 2016.*

N. Shukla, C. Xiong and S.C. Zhu. A Unified Framework for Human-Robot Knowledge Transfer. *AAAI Fall Symposium on AI for Human-Robot Interaction (AI-HRI), 2015.*

B. X. Nie, C. Xiong and S.C. Zhu. Joint Action Recognition and Pose Estimation From Video. *In Proceedings of IEEE Computer Vision and Pattern Recognition (CVPR), 2015.*

C. Xu, S.-H. Hsieh, C. Xiong, and J. J. Corso. Can humans fly? Action understanding with multiple classes of actors. *In Proceedings of IEEE Computer Vision and Pattern Recognition (CVPR), 2015.*

R. Xu, C. Xiong, W. Chen, and J. J. Corso. Jointly modeling deep video and compositional text to bridge vision and language in a unified framework. *In Proceedings of AAAI Conference on Artificial Intelligence (AAAI), 2015.*

G.-S. Xia, Z. Wang, C. Xiong, L. Zhang. Accurate Annotation of Remote Sensing Images via Active Spectral Clustering with Little Expert Knowledge. *Remote Sens. 2015, 7, 15014-15045.*

A. Barbu, D. Barrett, W. Chen, N. Siddharth, C. Xiong , J. J. Corso, C. D. Fellbaum, C. Hanson, S. J. Hanson, S. Helie, E. Malaia, B. A. Pearlmutter, J. M. Siskind, T. M. Talavage, and R. B. Wilbur. Seeing is worse than believing: Reading people's minds better than computer vision methods recognize actions. *In Proceedings of European Conference on Computer Vision (ECCV), 2014.*

C. Xiong , Scott McCloskey, Shao-Hang Hsieh and J. J. Corso. Latent Domains Modeling for Visual Domain Adaptation. *In Proceedings of AAAI Conference on Artificial Intelligence (AAAI), 2014. (Oral Presentation)*

W. Chen, C. Xiong and J. J. Corso. Actionness Ranking with Lattice Conditional Ordinal Random Fields. *In Proceedings of IEEE Computer Vision and Pattern Recognition (CVPR), 2014.*

C. Xiong , W. Chen, G. Chen, D. M. Johnson and J. J. Corso. Adaptive Quantization for Hashing: An Information-Based Approach to Learning Binary Codes. *In Proceedings of SIAM International Conference on Data Mining (SDM), 2014. (Oral Presentation)*

Z. Wang, G.-S. Xia,C. Xiong and L. Zhang. Spectral Active Clustering of Remote Sensing Images. *In Proceedings of IEEE International Geoscience and Remote Sensing Symposium (IGARSS), 2014.*

C. Xiong, D. M. Johnson and J. J. Corso. Uncertainty reduction for active image clustering via a hybrid global-local uncertainty model. *In Proceedings of AAAI Conference on Artificial Intelligence (Late-Breaking Papers Track), 2013.*

D. M. Johnson, C. Xiong and J. J. Corso. Comprehensive cross-hierarchy cluster agreement evaluation. *In Proceedings of AAAI Conference on Artificial Intelligence (Late-Breaking Papers Track), 2013.*

C. Xiong, C.Xu and J. J. Corso. Streaming hierarchical video segmentation. *In Proceedings of European Conference on Computer Vision (ECCV), 2012. (Oral Presentation)*

C. Xiong, D. Johnson, R. Xu and J. J. Corso. Random forests for metric learning with implicit pairwise position dependence. *In Proceedings of ACM SIGKDD International Conference on Knowledge Discovery and Data Mining (KDD 2012).*
(Oral Presentation)

C. Xiong and J. J. Corso. Coaction discovery: Segmentation of common actions across multiple videos. *In Proceedings of Multimedia Data Mining Workshop in Conjunction with the ACM SIGKDD Conference on Knowledge Discovery and Data Mining (MDMKDD), 2012.*

G. Chen, C. Xiong and J. J. Corso. Dictionary transfer for image denoising via domain adaptation. *In Proceedings of IEEE International Conference on Image Processing (ICIP), 2012. (Oral Presentation)*

C. Xiong, D. Johnson and J. J. Corso. Efficient max-margin metric learning. *In Proceedings of European Conference on Data Mining (ECDM), 2012. (Oral Presentation)* **(Best paper award)**

C. Xiong, D. Johnson and J. J. Corso. Spectral active clustering via purification of the k-nearest neighbor graph. *In Proceedings of European Conference on Data Mining (ECDM), 2012.*

D. R. Schlegel, A. Y. C. Chen, C. Xiong, J. A. Delmerico, and J. J. Corso. AirTouch: Interacting with computer systems at a distance. *In Proceedings of IEEE Winter Vision Meetings: Workshop on Applications of Computer Vision (WACV), 2011.(Oral Presentation)*

K. Zeng, M. Zhao, C. Xiong, and S. C. Zhu. From Image Parsing to Painterly Rendering. *ACM Transactions on Graphics(TOG), 2009.*

L. Lin, Y. Wang, Y. Liu, C. Xiong and K. Zeng. Marker-less Registration Based on Template Tracking for Augmented Reality. *Multimedia Tools and Applications (MTA), 2009.*

Press Coverage

2019 Our work on Explainable AI:Explain Yourself! Leveraging Language Models for Commonsense Reasoning

- ***Silicon Angle***: Salesforce aims to bring more common sense to AI
- ***Venturebeat***: Salesforce's AI grasps commonsense reasoning
- ***ZDNet***: Salesforce open sources research to advance state of the art in AI for common sense reasoning

2018 Our work on Non-Autoregressive Neural Machine Translation

- ***CNBC***: Salesforce A.I. researchers came up with a faster way to translate text – and it's based on tech from Google
- ***Venturebeat***: Salesforce shows how to bypass a key bottleneck in AI translation
- ***Slator***: Salesforce Joins Neural Machine Translation Race

2017 Our work on Seq2SQL: Generating Structured Queries from Natural Language using Reinforcement Learning

- ***TechCrunch***: Salesforce is using AI to democratize SQL so anyone can query databases in natural language
- ***Venturebeat***: Salesforce creates AI tool for talking to databases

2017 Our work on a Deep Reinforced Model for Abstractive Summarization

- ***Forbes***: Salesforce Announces AI Breakthrough, Reducing Information Overload
- ***MIT Technology Review***: An Algorithm Summarizes Lengthy Text Surprisingly Well

2016 Our work on Dynamic Memory Networks for Visual and Textual Question Answering

- ***New York Times***: Taking Baby Steps Toward Software That Reasons Like Humans
- ***MIT Technology Review***: The Memory Trick Making Computers Seem Smarter

Honors and Awards

ACL 2019 Outstanding Paper Award

Professional Services

Conference Area Chair:

- Annual Meeting of the Association for Computational Linguistics (ACL 2019)
- Conference on Empirical Methods on Natural Language Processing (EMNLP 2019, EMNLP 2020)
- CCF International Conference on Natural Language Processing and Chinese Computing (NLPCC 2019)

Journal and Conference Reviewer:

- International Journal of Computer Vision (IJCV)
- IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI)
- IEEE Transactions on Image Processing (TIP)
- Neurocomputing
- Pattern Recognition
- IEEE International Conference on Computer Vision (ICCV), 2015-2019
- Neural Information Processing Systems (NIPS), 2016-2019
- IEEE Computer Vision and Pattern Recognition (CVPR), 2016-2020
- International Conference on Learning Representations (ICLR), 2017-2020
- International Conference on Machine Learning (ICML), 2018-2020
- Annual Meeting of the Association for Computational Linguistics (ACL), 2018-2019
- Conference on Empirical Methods on Natural Language Processing (EMNLP), 2018