Yun-Nung (Vivian) Chen

Assistant Professor · National Taiwan University

(+1) 412-465-0130 | y.v.chen@ieee.org | vivianchen.idv.tw | yvchen | vivianynchen

Education

Carnegie Mellon University (CMU) — *Pittsburgh, PA*

M.S. & Ph.D. in Computer Science – Language and Information Technologies — *2011 - 2015*

- GPA: 3.92/4.0; Received Graduate Research Fellowships.

National Taiwan University (NTU) — *Taipei, Taiwan*

B.S. & M.S. in Computer Science and Information Engineering — *2005 - 2011*

- GPA: 4.0/4.0; Graduated with College Honors and received five Presidential Awards.

Honors & Awards

Research

2017	**NVIDIA GTC 2017 Best Scientific Research Award**, NVIDIA	*San Jose, CA*
2017	**Google Faculty Research Awards 2016**, Google Research	*Mountain View, CA*
2013	**Best Student Paper Award**, IEEE ASRU 2013 [1/ 170; < 0.6%]	*Olomouc, Czech*
2013	**Best Poster Award**, CMU LTI SRS 2013	*Pittsburgh, U.S.A*
2012	**Best Student Paper Shortlist**, ISCA INTERSPEECH 2012 [10/ 1300; < 0.8%]	*Portland, U.S.A*
2010	**Best Student Paper Award**, IEEE SLT 2010 [2/ 150; < 2%]	*Berkeley, U.S.A.*
2011	**ACLCLP Thesis Award**, ACLCLP	*Taipei, Taiwan*

Academic

2011	**Phi Tau Phi Award**, Member of the Phi Tau Phi Scholastic Honor Society	*Taipei, Taiwan*
2010	**Excellent Teaching Assistant Award**, NTU CSIE Dept.	*Taipei, Taiwan*
2006–2009	**Presidential Award**, NTU CSIE Dept. (Spring'07, Fall'07, Spring'08, Fall'08, Spring'09)	*Taipei, Taiwan*
2008	**Connected Life Special Prize**, Yahoo! 2008 Open Hack Day [1/42; <0.1%]	*Taipei, Taiwan*

Scholarship

2013	**MOE Technologies Incubation Scholarship**, Ministry of Education	*Taiwan*
2013	**Government Scholarship for Studying Abroad**, Ministry of Education	*Taiwan*
2013	**The US Google Anita Borg Memorial Scholarship Finalist**, Google Inc.	*U.S.A.*
2009–2011	**Advanced Speech Technologies Scholarship**, NTU EECS	*Taipei, Taiwan*
2011–2015	**Graduate Research Fellowship**, CMU	*Pittsburgh, U.S.A.*
2008	**Pen Wen Yuan Scholarship**, NTU EECS	*Taipei, Taiwan*

Experience

National Taiwan University, Dept. Computer Science & Information Engineering — *Taipei, Taiwan*

Assistant Professor / Lead Machine Intelligence & Understanding Laboratory — *Aug. 2016 - Present*

- Multi-sense word representation: [1]
- Deep dialogue modeling: [6]
- Deep abstract summarization: [5]

Microsoft Research, Deep Learning Technology Center — *Redmond, U.S.A.*

Postdoctoral Researcher — *Feb. 2016 - Aug. 2016*

- Deep conversation understanding: [8], [2], [9], [11]
- Deep dialogue modeling: [4]

Carnegie Mellon University, School of Computer Science — *Pittsburgh, U.S.A.*

Graduate Research Assistant — *Aug. 2011 - Dec. 2015*

- Spoken language understanding: [10], [12], [14]–[17], [19], [21]
- Multi-party speech summarization: [20], [24], [25]
- Brain-enabled multimodal speech application: [22]

Microsoft Research, Speech & Dialog Research Group — *Mountain View, U.S.A*

Research Intern — *Summer 2014 & Summer 2015*

- Intent modeling & understanding: [7], [13]
- Unsupervised relation detection: [18]

National Taiwan University, Digital Speech Processing Laboratory — *Taipei, Taiwan*

Graduate Research Assistant — *Jul. 2009 - Aug. 2011*

- Key term extraction: [3], [23], [28]
- Speech summarization: [27]
- Spoken term detection: [26]

Selected Publications

Journal Articles

[1] G.-H. Lee and Y.-N. Chen, "Muse: Modularizing unsupervised sense embeddings," *ArXiv preprint arXiv:1704.04601*, 2017.

[2] Y.-N. Chen, D. Hakkani-Tur, G. Tur, A. Celikyilmaz, J. Gao, and L. Deng, "Knowledge as a teacher: Knowledge-guided structural attention networks," *ArXiv preprint arXiv:1609.03286*, 2016.

[3] H.-Y. Lee, S.-R. Shiang, C.-F. Yeh, Y.-N. Chen, Y. Huang, S.-Y. Kong, and L. shan Lee, "Spoken knowledge organization by semantic structuring and a prototype course lecture system for personalized learning," *IEEE/ACM Transactions on Audio, Speech, and Language Processing (TASLP)*, vol. 22, no. 5, pp. 883–898, 2014.

Peer-Reviewed Conference Papers

[4] B. Dhingra, L. Li, X. Li, J. Gao, Y.-N. Chen, F. Ahmed, and L. Deng, "Toward end-to-end reinforcement learning of dialogue agents for information access," in *Proceedings of The 55th Annual Meeting of the Association for Computational Linguistics (ACL)*, Jul. 2017.

[5] B. R. Lu, F. Shyu, Y.-N. Chen, H.-Y. Lee, and L.-S. Lee, "Order-preserving abstractive summarization for spoken content based on connectionist temporal classification," in *Proc. of 18th Annual Conference of the International Speech Communication Association (INTERSPEECH)*, ISCA, Aug. 2017.

[6] X. Yang, Y.-N. Chen, D. Hakkani-Tur, P. Crook, X. Li, J. Gao, and L. Deng, "End-to-end joint learning of natural language understanding and dialogue manager," in *Proc. of Proceedings of The 42nd IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, IEEE, Mar. 2017.

[7] Y.-N. Chen, D. Hakkani-Tür, and X. He, "Zero-shot learning of intent embeddings for expansion by convolutional deep structured semantic models," in *Proc. of The 41st IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, IEEE, Mar. 2016.

[8] Y.-N. Chen, D. Hakkani-Tür, G. Tur, J. Gao, and D. Li, "End-to-end memory networks with knowledge carryover for multi-turn spoken language understanding," in *Proc. of The 17th Annual Meeting of the International Speech Communication Association (INTERSPEECH)*, Sep. 2016.

[9] Y.-N. Chen, D. Hakkani-Tür, G. Tur, A. Celikyilmaz, J. Gao, and L. Deng, "Syntax or semantics? knowledge-guided joint semantic frame parsing," in *Proc. of 2016 IEEE Spoken Language Technology Workshop (SLT)*, IEEE, Dec. 2016.

[10] Y.-N. Chen, M. Sun, A. I. Rudnicky, and A. Gershman, "Unsupervised user intent modeling by feature-enriched matrix factorization," in *Proc. of The 41st IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, IEEE, Mar. 2016.

[11] D. Hakkani-Tur, G. Tur, A. Celikyilmaz, Y.-N. Chen, J. Gao, L. Deng, and Y.-Y. Wang, "Multi-domain joint semantic frame parsing using bi-directional RNN-LSTM," in *Proc. of 17th Annual Conference of the International Speech Communication Association (INTERSPEECH)*, ISCA, Sep. 2016.

[12] M. Sun, Y.-N. Chen, and A. I. Rudnicky, "An intelligent assistant for high-level task understanding," in *Proc. of the 21st Annual Meeting of the Intelligent Interfaces Community (IUI)*, ACM, Mar. 2016.

[13] Y.-N. Chen, D. Hakkani-Tür, and X. He, "Detecting actionable items in meetings by convolutional deep structured semantic models," in *Proc. of 2015 IEEE Workshop on Automatic Speech Recognition and Understanding (ASRU)*, IEEE, Dec. 2015, pp. 375–382.

[14] Y.-N. Chen, M. Sun, A. I. Rudnicky, and A. Gershman, "Leveraging behavioral patterns of mobile applications for personalized spoken language understanding," in *Proc. of The 17th ACM International Conference on Multimodal Interaction (ICMI)*, ACM, Nov. 2015, pp. 83–86.

[15] Y.-N. Chen, W. Y. Wang, A. Gershman, and A. I. Rudnicky, "Matrix factorization with knowledge graph propagation for unsupervised spoken language understanding," in *Proc. of he 53rd Annual Meeting of the Association for Computational Linguistics and The 7th International Joint Conference on Natural Language Processing of the Asian Federation of Natural Language Processing (ACL-IJCNLP)*, ACL, Jul. 2015, pp. 483–494.

[16] Y.-N. Chen, W. Y. Wang, and A. I. Rudnicky, "Jointly modeling inter-slot relations by random walk on knowledge graphs for unsupervised spoken language understanding," in *Proc. of 2015 Conference of the North American Chapter of the Association for Computational Linguistics - Human Language Technologies (NAACL-HLT)*, ACL, May 2015, pp. 619–629.

[17] Y.-N. Chen, W. Y. Wang, and A. I. Rudnicky, "Learning semantic hierarchy with distributional representations for unsupervised spoken language understanding," in *Proc. of 16th Annual Conference of the International Speech Communication Association (INTERSPEECH)*, ISCA, Sep. 2015, pp. 1869–1873.
[18] Y.-N. Chen, D. Hakkani-Tür, and G. Tur, "Deriving local relational surface forms from dependency-based entity embeddings for unsupervised spoken language understanding," in *Proc. of 2014 IEEE Spoken Language Technology Workshop (SLT)*, IEEE, Dec. 2014, pp. 242–247.
[19] Y.-N. Chen and A. I. Rudnicky, "Dynamically supporting unexplored domains in conversational interactions by enriching semantics with neural word embeddings," in *Proc. of 2014 IEEE Spoken Language Technology Workshop (SLT)*, IEEE, Dec. 2014, pp. 590–595.
[20] Y.-N. Chen and F. Metze, "Multi-layer mutually reinforced random walk with hidden parameters for improved multi-party meeting summarization," in *Proc. of The 14th Annual Conference of the International Speech Communication Association (INTERSPEECH)*, ISCA, Aug. 2013, pp. 485–489.
[21] Y.-N. Chen, W. Y. Wang, and A. I. Rudnicky, "Unsupervised induction and filling of semantic slots for spoken dialogue systems using frame-semantic parsing," in *Proc. of 2013 IEEE Workshop on Automatic Speech Recognition and Understanding (ASRU)*, IEEE, Dec. 2013, pp. 120–125.
[22] Y.-N. Chen, K.-M. Chang, and J. Mostow, "Towards using EEG to improve asr accuracy," in *Proc. of The 2012 Conference of the North American Chapter of the Association for Computational Linguistics: Human Language Technologies (NAACL-HLT)*, ACL, Jun. 2012, pp. 382–385.
[23] Y.-N. Chen, Y. Huang, H.-Y. Lee, and L.-S. Lee, "Unsupervised two-stage keyword extraction from spoken documents by topic coherence and support vector machine," in *Proc. of The 37th International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, IEEE, Mar. 2012, pp. 5041–5044.
[24] Y.-N. Chen and F. Metze, "Intra-speaker topic modeling for improved multi-party meeting summarization with integrated random walk," in *Proc. of The 2012 Conference of the North American Chapter of the Association for Computational Linguistics: Human Language Technologies (NAACL-HLT)*, ACL, Jun. 2012, pp. 377–381.
[25] Y.-N. Chen and F. Metze, "Two-layer mutually reinforced random walk for improved multi-party meeting summarization," in *Proc. of The 4th IEEE Workshop on Spoken Language Technology (SLT)*, IEEE, Dec. 2012, pp. 461–466.
[26] Y.-N. Chen, C.-P. Chen, H.-Y. Lee, C.-A. Chan, and L.-S. Lee, "Improved spoken term detection with graph-based re-ranking in feature space," in *Proc. of The 36th International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, IEEE, May 2011, pp. 5644–5647.
[27] Y.-N. Chen, Y. Huang, C.-F. Yeh, and L.-S. Lee, "Spoken lecture summarization by random walk over a graph constructed with automatically extracted key terms," in *Proc. of The 12th Annual Conference of the International Speech Communication Association (INTERSPEECH)*, ISCA, Aug. 2011, pp. 933–936.
[28] Y.-N. Chen, Y. Huang, S.-Y. Kong, and L.-S. Lee, "Automatic key term extraction from spoken course lectures using branching entropy and prosodic/semantic features," in *Proc. of The 3rd IEEE Workshop on Spoken Language Technology (SLT)*, IEEE, Dec. 2010, pp. 265–270.

Invited Talks

Jul 2016	**Invited Speaker**, Contextual Spoken Language Understanding	*Google Research, Mountain View*
Jul 2016	**Invited Speaker**, Conversational / Dialogue System	*Appier Inc., Taipei*
Jan 2016	**Invited Speaker**, Unsupervised Learning and Modeling of Knowledge and Intent for Spoken Dialogue Systems	*NTU CSIE, Taipei*
Jan 2016	**Invited Colloquium Speaker**, "Sorry, I didn't get that!" – Statistical Learning from Dialogues for Intelligent Assistants	*NTHU CSIE, Hsinchu*
Nov 2015	**Invited Speaker**, Unsupervised Learning and Modeling of Knowledge and Intent for Spoken Language Understanding	*Microsoft Research, Redmond*
Nov 2015	**Invited Speaker**, Unsupervised Learning and Modeling of Knowledge and Intent from Dialogues	*VoiceBox Tech., Redmond*
Oct 2015	**Invited Colloquium Speaker**, "Sorry, I didn't get that!" – Statistical Learning from Dialogues for Intelligent Assistants	*NTU CSIE, Taipei*
Oct 2015	**Invited Speaker**, Ontology Learning and Intent Modeling for Spoken Language Understanding	*Academic Sinica, Taipei*
Jul 2015	**Invited Speaker**, Matrix Factorization with Knowledge Graph Propagation for Unsupervised Spoken Language Understanding	*Microsoft Research Asia, Beijing*
Aug 2015	**Intern Presenter**, Detecting Actionable Items in Meetings by Convolutional Deep Structured Semantic Models	*Microsoft Research, Redmond*
May 2015	**Invited Speaker**, Unsupervised Learning and Modeling of Knowledge and Intent for Dialogue Systems	*Microsoft Research, Mountain View*
May 2015	**Invited Speaker**, Unsupervised Learning and Modeling of Knowledge and Intent for Dialogue Systems	*NYU CS, New York*
Jan 2015	**Invited Speaker**, Unsupervised Learning and Modeling of Knowledge and Intent for Dialogue Systems	*NCTU EE, Hsinchu*

Professional Activities

Program Committee

2014 - Present

- Association for Computational Linguistics (ACL) – 2016, 2017
- Empirical Methods in Natural Language Processing (EMNLP) – 2015, 2016, 2017
- North American Chapter of the Association for Computational Linguistics: Human Language Technologies (NAACL-HLT) – 2016
- Neural Information Processing Systems (NIPS) – 2016
- International Speech Communication Association (INTERSPEECH) – 2016, 2017
- International Conference on Acoustics, Speech, and Signal Processing (ICASSP) – 2016, 2017
- Spoken Language Technology (SLT) – 2014, 2016
- Computational Linguistics (COLING) – 2016
- Language Resources and Evaluation (LREC) – 2016
- International Conference on Multimodal Interaction (ICMI) – 2015
- International Conference on Data Mining (ICWM) – 2016
- NIPS-SLU – 2015
- MASC-SLL – 2015

Journal Reviewer

2013 - Present

- IEEE/ACM Transactions on Audio, Speech and Language Processing: 2013, 2014, 2015, 2016, 2017
- Transactions of the Association for Computational Linguistics: 2015
- Artificial Intelligence Review: 2015
- International Journal on Artificial Intelligent Tools: 2014, 2015, 2016