

## *Selected Publications & Talks*

The Comcast Applied AI Researchers are experts in their fields of study and are sought after to present at academic and industry conferences:

**VideoSSL: Semi-Supervised Learning for Video Classification**, Longlong Jing, Toufiq Parag, Zhe Wu, Yingli Tian, Hongcheng Wang, WACV 2021 [[pdf](#)]

**Auto-annotation for Voice-enabled Entertainment Systems**, Wenyan Li and Ferhan Ture, SIGIR 2020 [[pdf](#)] [[presentation](#)]

**Operationalizing Streaming Telemetry and Machine Learning Model Serving: Customer Experience Automation**, Nicholas Pinckernell, Scott Rome, SCTE: ISBE / NCTA Technical Papers, 2020 [[pdf](#)]

**Video Activity Recognition for Smart Home Applications**

Embedded Vision Summit, Sept. 15, 2020

**Risk Minimization Under Sampling Bias Arising from Customer Interactions.**

Scott Rome and Michael Kreisel. In JSM Proceedings, Statistical Computing Section. Alexandria, VA: American Statistical Association. 2020

**Recommendation for New Users and New Items via Randomized Training and Mixture-of-Experts Transformation.**

Ziwei Zhu, Shahin Sefati, Parsa Saadatpanah, James Caverlee. 43rd International ACM SIGIR conference on Research and Development in Information Retrieval (SIGIR), 2020 [[pdf](#)]

**Challenges and Opportunities in Understanding Spoken Queries Directed at Modern Entertainment Platforms.** Ferhan Ture, Jinfeng Rao, Raphael Tang, and Jimmy Lin. In Proc. of ACM SIGIR Conference on Research and Development in Information Retrieval (SIGIR), 2019 [[pdf](#)]

**Yelling at Your TV: An Analysis of Speech Recognition Errors and Subsequent User Behavior on Entertainment Systems.**

Raphael Tang, Ferhan Ture, and Jimmy Lin. In Proc. of ACM SIGIR Conference on Research and Development in Information Retrieval (SIGIR), 2019 [[pdf](#)]

**CX, Model Training Automation and the Feature Store Problem.** O'Reilly Strata Data Conference, Mumin Ransom, Nick Pinckernell. New York, NY. Sep 29, 2019 [[Link](#)]

**Layout-Induced Video Representation for Recognizing Agent-in-Place Actions**, Ruichi Yu, Hongcheng Wang, Ang Li, Jingxiao Zheng, Vlad I. Morariu and Larry Davis, International Conference on Computer Vision (ICCV), Seoul, South Korea, Oct. 2019 [[link](#)]

**Enhancing Customer experience with xFinity home intelligence**, Hongcheng Wang, Philadelphia Artificial Intelligence and Machine Learning (PHLAI), Aug. 15, 2019 [[link](#)]

**End-to-end ML streaming with Kubeflow, Kafka, and Redis at scale.** OSCON, Nick Pinckernell. Portland, OR. Jul 16, 2019 [[Link](#)]

**How to Utilize MLflow and Kubernetes to Build an Enterprise ML Platform.** Spark+AI Summit . Nicholas Pinckernell. San Francisco, CA, Apr 25, 2019 [[Link](#)]

**Winning the Audience with AI: Comcast's Journey to Building an Agile Data and AI Platform at Scale.** Spark+AI Summit Keynote. Jim Forsythe & Jan Neumann. San Francisco, CA, Apr 25, 2019 [[Video](#)]

**AI's Role in re-inventing the Customer Experience.** Jan Neumann. Future of Technology Summit. Washington, DC. Apr 9, 2019 [\[Link\]](#)

**How AI Allows Comcast to Reinvent the Customer Experience.** Jan Neumann. GWSB Center for the Connected Consumer Inaugural Conference on the Intelligence of Things, Washington, DC, Apr 5, 2019 [\[Link\]](#)

**Enabling Deep Discovery and Navigational Experiences with Voice and AI-Driven Media Analytics.** Jan Neumann, GPU Technology Conference (GTC), San Jose, CA, Mar 19, 2019

**Enabling Deep Discovery and Navigational Experiences with AI-Driven Media Analytics.** Faisal Ishtiaq & Jan Neumann, Media Insights and Engagements Conference, Los Angeles, CA, Jan 29, 2019 [\[Link\]](#)

**TV and Movie Recommendations: The Comcast Case.** Shahin Sefati, Jan Neumann, Hassan Sayyadi, Book Chapter, Collaborative Recommendations, pp. 465-479, 2018.

**Conversational Content Discovery via Comcast X1 Voice Interface.** Shahin Sefati, Parsa Saadatpanah, Hassan Sayyadi, Jan Neumann, In Proceedings of the 12th ACM Conference on Recommender Systems, pp. 489-489, Vancouver, Canada, 2018. [\[video\]](#)

**Deep Learning for Smart Home Monitoring.** Hongcheng Wang, GPU Technical Conference (GTC), Washington, D.C., Oct. 23-24, 2018 [\[Link\]](#)

**Using AI to Improve the Customer Experience.** Bernard Burg, SCTE-ISBE CABLE-TEC EXPO 2018, Oct. 22-25, Atlanta, GA

**How Comcast uses AI to reinvent the customer experience.** Jan Neumann. CableLabs Summer Conference, Keystone, CO, August 7th, 2018

**Multi-Perspective Relevance Matching with Hierarchical ConvNets for Social Media Search.** Jinfeng Rao, Wei Yang, Yuhao Zhang, Ferhan Ture, and Jimmy Lin. In Proc. of Association for the Advancement of Artificial Intelligence (AAAI), 2019 [\[pdf\]](#)

**Multi-Task Learning with Neural Networks for Voice Query Understanding on an Entertainment Platform.** Jinfeng Rao, Ferhan Ture, and Jimmy Lin, In Proc. of International Conference on Knowledge Discovery & Data Mining (KDD), 2018 [\[pdf\]](#)

**How Voice helps Comcast to reinvent the customer experience.** Jeanine Heck & Jan Neumann, VOICE Summit, Newark, NJ, July 2018, [\[Video\]](#)

**What Do Viewers Say to Their TVs? An Analysis of Voice Queries to Entertainment Systems.** Jinfeng Rao, Ferhan Ture, and Jimmy Lin, In Proc. of ACM SIGIR Conference on Research and Development in Information Retrieval (SIGIR 2018). [\[pdf\]](#)

**Representing Videos based on Scene Layouts for Recognizing Agent-in-Place Actions.** Ruichi Yu, Hongcheng Wang, Ang Li, Jingxiao Zheng, Vlad I. Morariu and Larry Davis, arXiv:1804.01429 [cs.CV] [\[PDF\]](#)

**Architecting a Smart Home Monitoring System with Millions of Cameras.** HongchengWang, Embedded Vision Summit, Santa Clara, CA, May 22, 2018 [\[Link\]](#)

**How Comcast uses AI to reinvent the customer experience.** Jan Neumann & Dominique Izbicki. AI Conference NYC, May 1st, 2018. [\[Link\]](#)

**How Comcast Uses Deep Learning to Build Intelligent Products and Applications.** Jan Neumann. Nvidia GPU Technology Conference, San Jose, CA, March 2018 [\[Link\]](#)

**ReMotENet: Efficient Relevant Motion Event Detection for Large-scale Home Surveillance Videos.** Ruichi Yu, Hongcheng Wang and Larry Davis, IEEE WACV, Stateline, NV, arXiv:1801.02031, 2018 [\[PDF\]](#)

**Talking to Your TV: Context-Aware Voice Search with Hierarchical Recurrent Neural Networks.** Jinfeng Rao, Ferhan Ture, Hua He, Oliver Jojic, and Jimmy Lin, In Proc. of International Conference on Information and Knowledge Management (CIKM 2017)

**No Need to Pay Attention: Simple Recurrent Neural Networks Work! (for Answering “Simple” Questions),** Ferhan Ture and Oliver Jojic, In Proc. of Empirical Methods in NLP (EMNLP 2017)

**Integrating Lexical and Temporal Signals in Neural Ranking Models for Searching Social Media Streams.** Jinfeng Rao, Hua He, Haotian Zhang, Ferhan Ture, Royal Sequiera, Salman Mohammed, and Jimmy Lin, To appear in SIGIR 2017 Workshop on Neural Information Retrieval (Neu-IR’17) [[pdf](#)]

**Mining Temporal Statistics of Query Terms for Searching Social Media Posts.** Jinfeng Rao, Ferhan Ture, Xing Niu and Jimmy Lin, To appear in International Conference on the Theory of Information Retrieval (ICTIR 2017)

**How AI Powers the Comcast X1 Voice Interface,** Jan Neumann, Ferhan Ture & Oliver Jojic, O’Reilly AI Conference, June 2017, New York NY [[Conference link](#)]

**Data Science & Machine Learning to Improve the Customer Experience,** Jan Neumann, Business Analytics Innovation Summit, May 2017, Chicago, IL [[Conference Schedule](#)]

**How GPUs Power Comcast’s X1 Voice Remote and Smart Video Analytics,** Jan Neumann, GPU Technology Conference, May 2017, San Jose, CA [[Conference Link](#)]

**How AI Powers the X1 Entertainment System.** Jan Neumann, AI Summit NYC, Dec 2016, New York, NY [[Conference web site](#)]

**Learning to Translate for Multilingual Question Answering.** Ferhan Ture and Elizabeth Boshee, 2016 Conference on Empirical Methods in Natural Language Processing, Austin, TX [[PDF](#)]

**3rd Workshop on Recommender Systems for TV and Online Video (RecSysTV 2016) organized by Jan Neumann, John Hannon, and Hassan Sayyadi in conjunction with ACM RecSys 2016, Boston, MA**

**Ask Your TV: Real-Time Question Answering with Recurrent Neural Networks.** Ferhan Ture and Oliver Jojic, SIGIR 2016, Pisa, Italy [[ACM DL](#)] [[Arxiv pdf](#)]

**Learning Temporal Regularity in Video Sequences.** Mahmudul Hasan, Jonghyun Choi, Jan Neumann, Amit K. Roy-Chowdhury, Larry S. Davis, CVPR 2016. [[PDF](#)] [[Supplementary](#)] [[Project Page](#)] [[Code](#)] [[Video1](#)] [[Video2](#)] [[Poster](#)] arXiv:1604.04574 [[PDF-Preprint](#)]

**How to Fake Multiply with a Gaussian Matrix.** Michael Kapralov, Vamsi K. Potluru and David P. Woodruff, ICML 2016. ([paper](#), [code](#), [arxiv](#))

**Structured TV Shows — “You have been Chopped”.** Ferhan Ture, Jonghyun Choi, Hongcheng Wang and Vamsi K. Potluru, ICML workshop 2016. ([pdf](#))

**[Data Science and Machine Learning to Improve the Customer Experience.](#) Jan Neumann, Business Analytics Summit – Innovation Enterprise, Chicago, IL, May 2016**

**[How Automatic Content Analytics enables the TV Experiences of the Future.](#) Jan Neumann, INTX 2016, Boston, MA**

**[How Comcast Uses Data Science and ML to Improve the Customer Experience.](#) Jan Neumann, Global Big Data Conference March 2016, Santa Clara, US**

**Knowledge Transfer with Interactive Learning of Semantic Relationships.** Jonghyun Choi, Sung Ju Hwang, Leonid Sigal and Larry S. Davis, AAAI Conference on Artificial Intelligence (AAAI) 2016 ([PDF](#))

**[How Spark is working out at Comcast Scale.](#) Sridhar Alla and Jan Neumann, Strata Hadop NYC 2015**

[Recommendations for Live TV](#). Jan Neumann and Hassan Sayyadi, RecSys 2015, Vienna Austria

[2nd Workshop on Recommender Systems for TV and Online Video \(RecSysTV 2015\)](#) organized by Jan Neumann, Hassan Sayyadi, John Hannon, Roberto Turrin, and Danny Bickson in conjunction with ACM RecSys 2015, Vienna, Austria

[Data Science for Customer Service at Comcast](#). Jan Neumann, Dato Data Science Summit, San Francisco 2015 ([Video](#))

[Comcast – Real-time Recommendations with Spark](#). Jan Neumann, DC Spark Interactive Meetup, Washington, DC, May 2015 ([Video](#))

[Real-time Recommendations using Apache Spark](#). Jan Neumann & Sirdhar Alla, Spark Summit East 2015 ([Video](#))

[1st Workshop on Recommender Systems for TV and Online Video \(RecSysTV 2014\)](#) organized by Jan Neumann, Hassan Sayyadi, John Hannon, Roberto Turrin, and Danny Bickson in conjunction with ACM RecSys 2014, Foster City, USA

[A probabilistic definition of item similarity](#). Oliver Jojic, Manu Shukla and Niranjan Bhosarekar. ACM Recsys 2011, Chicago, IL, USA. [[pdf](#)]