Nishant Subramani

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Work Experience

- **Predoctoral Resident | Intel Intelligent Systems Lab** January 2021 – Present
  - Advised by Vladlen Koltun.
  - Working on analyzing and controlling large pretrained language models.
- **Machine Learning Research Scientist | Scale AI** April 2020 – December 2020
  - Research Tech Lead & ML Lead on Scale Document.
  - Mentored junior researchers to be a part of their first ML paper submission to a major conference.
  - Built multi-task optical character recognition & document intelligence models, beating Google, Amazon, and other vendors, which landed a $500k corporate models as a service (MaaS) contract and started our MaaS product offering.
  - Wrote document understanding survey paper which was accepted to the MLRSA workshop at NeurIPS 2020.
  - Developed algorithms to condition transformer language models to generate unseen sentences, paper under review.
  - Created a natural adversarial objects dataset to improve robustness of object detection systems, paper under review.
- **Research Scientist | AI Foundation** July 2019 – January 2020
  - Built a sample- and memory-efficient multi-task fake speech detection system and published at AAAI20.
  - Created a large, diverse fake speech dataset to improve internal fake speech detection systems.
  - Developed an audio-driven facial animation model, which made AI rendered puppets more realistic.
  - Evaluated the efficacy of different sentence representation methods for question-answer retrieval in dialog.

Publications (with embedded links)

1. Gehrmann, Sebastian, ... **Subramani, Nishant**, ... Jiawei Zhou. "The GEM Benchmark: Natural Language Generation, its Evaluation and Metrics" **arXiv**
2. **Subramani, Nishant** and Nivedita Suresh. "Discovering Useful Sentence Representations from Large Pretrained Language Models" **Under Review at NAACL 2021**
3. Lau, Felix, Rosanne Liu, **Nishant Subramani**, Alexandra Harrison, Aerin Kim, and Elliot Branson. "Natural Adversarial Objects" **Under Review at CVPR 2021**
4. **Subramani, Nishant**, Alexandre Matton, Malcolm Greaves, and Adrian Lam. "A Survey of Deep Learning Approaches for OCR and Document Understanding" **MLRSA Workshop at NeurIPS 2020**
5. **Subramani, Nishant** and Delip Rao. "Learning Efficient Representations for Fake Speech Detection" **AAAI 2020**
6. **Subramani, Nishant**, Samuel R. Bowman, and Kyunghyun Cho. "Can Unconditional Language Models Recover Arbitrary Sentences?" **NeurIPS 2019**
7. **Subramani, Nishant**. "Pag2admg: An Algorithm for the Complete Causal Enumeration of a Markov Equivalence Class" **ICML 2018 CausalML Workshop**.
8. **Subramani, Nishant**, and Doug Downey. "PAG2ADMG: A Novel Methodology to Enumerate Causal Graph Structures" **AAAI 2017 Student Abstract**

Research Experience

- **Research Collaborator | Allen Institute for AI** October 2020 – Present
  - Working with Doug Downey and Daniel King on scientific concept generation models from scientific papers with the Semantic Scholar team.
- **NLP Researcher | Masakhane** May 2020 – Present
  - Co-organizing the AfricaNLP 2021 workshop. **Accepted at EACL2021**
- **Research Assistant | New York University** September 2017 – May 2019
  - Advised by Kyunghyun Cho and Sam Bowman.
  - Developed a framework to analyze the sentence space of a recurrent neural language model.
  - Built a pipeline to investigate using a language model as a universal decoder for multitask natural language generation.
- **Deep Learning Research Intern | Salesforce Research** March 2017 – August 2017
  - Supervised by Richard Socher
  - Built a multitask NLP system trained end-to-end for a vareity of NLP tasks.
  - Investigated impact of CoVe pretraining on state of the art abstractive summarization and question answering models.
- **Research Assistant | Northwestern University** July 2014 – March 2015; March 2016 – June 2017
  - Advised by Doug Downey
  - Developed and evaluated extrapolator-based hyperparameter optimization methods, adaboost-based ensembling methods, hashing-based dropout, and importance sampling for recurrent language modeling.
  - Incorporated prior knowledge into word2vec training to improve performance on analogy tasks.
- **Research Assistant in Biomedical Informatics | Stanford University** Jun 2015 – Jan 2016
  - Supervised by Olivier Gevaert
  - Developed a Bayesian Network structure learning methodology to identify a genetic basis for Glioblastoma.

Education

- **Courant Institute of Mathematical Sciences | New York University** Sept 2017 – May 2019
  - **M.S. Computer Science** (Deep Learning & NLP) GPA: 3.8/4.0
  - **Research Advisors:** Kyunghyun Cho and Sam Bowman
- **Northwestern University** Sept 2013 – June 2017
  - **B.A./M.S. Statistics/Computer Science**; Stat GPA: 4.0/4.0; MS GPA: 4.0/4.0
  - **Research Advisor:** Doug Downey