Piyush Chawla

Headline: Seeking internship for Summer-2021

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Education (The Ohio State University, Columbus OH)

Research: Interpretable AI (XAI), Visualization, NLP, Machine Learning **GPA: 3.97/4.0**
Ph.D. Computer Science Engineering
Aug 2018 - Present

Technical Skills

Programming (Python, JavaScript, Java), **Libraries** (Pytorch, Scikit Learn, Pandas, D3, Flask)
Key Courses Machine Learning, NLP, Optimization, AI, Data Mining, Scientific Visualization, Linear Algebra

Recent Projects

Relation-Induction on Neural Word Embeddings *(Python, Pytorch)* **Fall 2020**

- Word embeddings contain a myriad of information and possibly more that still needs to be uncovered.
- Developed classification models for learning semantic relationships between words.
- Beat SOTA on relation datasets BATS, Google, DiffVec using Skip-Gram (Word2vec) and Glove embeddings.
- Created few-shot learning models for limited-data variants of the classification models.
- Implemented meta-learning algorithms MAML (FOMAML) and Reptile.

Variance-Reduced Gradient Descent Algorithms *(Python, Pytorch)* **Fall 2020**

- Stochastic Gradient Descent is a goto in Applied-ML. Random-batch sampling may lead to slow convergence.
- Implemented Variance-Reduced Gradient Descent optimization algorithms SAG, SAGA, SVRG.
- Compared performance (convergence time) on CIFAR-10 dataset using Wide-Resnet model.

Understanding Convolutional Neural Networks for text *(D3, Javascript, Python, Flask)* **Spr 2020**

- ConvNet visualization has been explored for computer vision. However, understanding this class of architecture still remains an open problem in the context of natural language (text) applications.
- Developed an approach (TSD) to visualize the contribution (+ve/-ve) of each word in a sentence towards the predicted label (sentiment).
- Discussed possible adversarial and error analysis strategies for ConvNet-based sentiment-analysis classifiers.

Publications/Ongoing Works

1. H. Choi, **P. Chawla**, H.W. Shen, “Topic Tracking for Time-Varying Text Data” (name changed for blind-review)
2. **Piyush Chawla**, S. Hazarika, Han-Wei Shen “Token-wise sentiment decomposition for ConvNet: Visualizing a sentiment classifier” Vis-Meets-AI/PacificVis 2020
3. **Piyush Chawla**, D. Esteves, K. Pujar, Jens Lehmann “SimpleLSTM: A Deep-Learning Approach to Simple-Claims Classification” EPIA-2019.
4. D. Esteves, A. J. Reddy, **Piyush Chawla** and Jens Lehmann “Belittling the Source: Trustworthiness Indicators to Obfuscate Fake News on the Web.” EMNLP 2018

Research/Work Experience

PhD, The Ohio State University, Columbus, OH **Aug 2018 - Present**

- GRAVITY Lab (Prof. Han-Wei Shen), DKI Lab (Prof. Yu Su)
- Full Instructor: Software Components 1
- Fellow: Ohio State University Fellowship

Research Assistant, Smart Data Analytics, Bonn-Germany **Dec 2017 - June 2018**
Bachelor’s Thesis: Link prediction in Multi-Lingual Knowledge Graphs (Python, Tensorflow)

- Used interlanguage links (e.g. English-German) in DBpedia knowledge graph.
- Implemented the mTransE model to improve link prediction accuracy.
- Developed a model (NLTransE) to add semantic knowledge from word embeddings to KG embeddings.

Summer Intern, University of Bonn DAAD WISE Scholarship (Top-100 all-over India) **May 2017 - Jul 2017**
Project: Knowledge graph completion using latent vector models (Python, Tensorflow)

- Explored different latent-vector models for KG link prediction. TransE, TransR, TransH, DistMult etc.
- Conducted large-scale experiments on DBpedia Knowledge Base to train KG completion models.