Justin Sybrandt Ph.D.

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Education

Ph.D. in CS, Clemson University (Aug. 2016 - May 2020)

- Thesis: *Exploiting Latent Features of Text and Graphs*
- Relevant Coursework (GPA 4/4): Design & Analysis of Algorithms, Advanced Data Structures, Data Mining, Distributed & Cluster Computing, Parallel Architecture, Network Science.
- Recipient of the GAANN DAISE & NRT PhD. fellowships.

BS in CS, Minor in Math, Grove City College (Aug. 2012 - May 2016)

- Graduated Summa Cum Laude (GPA 3.85/4).
- Top of class in computer science (in-major GPA 3.95/4).

Publications

Peer-Reviewed Publications

- *Moliere: Automatic biomedical hypothesis generation system.* Sybrandt, J., Shtutman, M., & Safro, I. (2017). In Proceedings of the 23rd ACM SIGKDD International Conference on Knowledge Discovery and Data Mining.
  (Acceptance rate 8.8%)
- *Large-scale validation of hypothesis generation systems via candidate ranking.* Sybrandt, J., Shtutman, M., & Safro, I. (2018). In 2018 IEEE International Conference on Big Data.
  (Acceptance rate 18%)
- *Are abstracts enough for hypothesis generation?* Sybrandt, J., Carrabba, A., Herzog, A., & Safro, I. (2018). In 2018 IEEE International Conference on Big Data.
  (Acceptance rate 18%)
- *Inhibition of the DDX3 prevents HIV-1 Tat and cocaine-induced neurotoxicity by targeting microglia activation.* Aksenova M., Sybrandt J., Cui B., Sikirzhytski V., Ji H., Odhiambo D., Lucius M., Turner J. R., Broude E., Pena E., Lizzaraga S., Zhu J., Safro I., Wyatt M. D., & Shtutman M. (2019). Journal of Neuroimmune Pharmacology.
- *Using Drive-by Health Monitoring to Detect Bridge Damage Considering Environmental and Operational Effects.* Locke, W., Sybrandt, J., Safro, I., & Atamturktur, S. (2019). Journal of Sound and Vibration.

In Submission Preprints

- *AGATHA: Automatic Graph-mining And Transformer based Hypothesis generation Approach.* Sybrandt, J., Tyagin I., Shtutman M., & Safro, I. `arxiv.org/abs/2002.05635`
- *CBAG: Conditional Biomedical Abstract Generation.* Sybrandt, J., & Safro, I. `arxiv.org/abs/2002.05637`
- *First-and High-Order Bipartite Embeddings.* Sybrandt, J., & Safro, I. (2019). `arxiv.org/abs/1905.10953`
- *Partition Hypergraphs with Embeddings.* Sybrandt, J., Shaydulin R., & Safro I. (2019). `arxiv.org/abs/1909.04016` Revisions in-progress to TKDE
- *Unsupervised Hierarchical Graph Representation Learning by Mutual Information Maximization.* Ding, F., Zhang, X., Sybrandt, J., & Safro I. `arxiv.org/pdf/2003.08420.pdf`

Development Skills and Technologies

Programming Languages	C++, Python, Bash, SQL, Matlab, Java, Scala
Tools	Git, Linux, VIM, LaTeX, Mercurial
ML-Libraries	PyTorch, Tensorflow, Keras, Scikit-Learn, Horovod
Parallel/Distributed Programming	Dask, OpenMP, Spark, Flume, Dataswarm, GNU-Parallel, MPI

Work Experience

Summer 2019, Ph.D. SWE, Facebook

- Attented the Intern Executive Dinner hosted by Mark Zuckerberg, awarded to only 13 of the over 3,000 interns in 2019.
- Improved the precision and recall of models that detect violating content on Instagram by exploring and producing embedding-based features.
- Demonstrated high productivity and fast learning speed, as evidenced by formal peer feedback, while adapting to the workflow at Facebook.

Summer 2018, Ph.D. SWE Intern, Google

- Proposed and produced a graph-mining solution for identifying product attributes that could decreased the need for human oversight by over 50%.
- Worked efficiently, developing my proposed system from a whiteboard idea to an in-production pipeline ahead of schedule.
- Performed comprehensive validation, ensuring classifier performance across product categories.
- Presented work to senior research scientists within Google's graph-mining team.

Summer 2017, Graduate Research Assistant, Los Alamos National Lab

- Developed high performance software in Julia for non-negative matrix factorization to be released in the open-source scientific computing library *madsjulia*.
- Evaluated the ability for my research project MOLIERE to extend to water resources research with the computational environmental science group.

2015-2016, Programming Intern, Vigilant Cyber Systems, Inc.

- Developed a visualization library in Scala using ScalaFX for a DoD contract.
- Worked independently as a self-led remote employee, while simultaneously finishing my last year of undergrad.

Summer 2015, Student Researcher, UC Berkeley & NERSC

- Designed a tool in Java to quickly synchronize multi-petabyte Parallel File Systems.
- Created a poster that was accepted at the ACM Student Poster Session at the Supercomputing conference in 2015.
- Presented a work in progress paper at the Parallel Data Storage Workshop.