Michael Hanna

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1 Education:

University of Trento, Trento, Italy (expected July 2022)[1]
MS, Cognitive Science; specialization in computational linguistics

Charles University, Prague, Czech Republic (expected Sept. 2022)[1]
MS, Computer Science; specialization in computational linguistics, GPA: 1 (excellent) / A

University of Chicago, Chicago, IL, USA (June 2020)
BS with Honors, Computer Science, specialization in machine learning; GPA: 3.95
BA with Honors, Linguistics; GPA: 3.96
Honors Thesis: **Measuring the Interpretability of Latent-Space Representations of Sentences from Variational Autoencoders**.

2 Publications:

Michael Hanna and Ondřej Bojar. 2021. **A Fine-Grained Analysis of BERTScore**. In *Proceedings of the Sixth Conference on Machine Translation*. Punta Cana, Dominican Republic (Online). Association for Computational Linguistics[2]

Michael Hanna and David Mareček. 2021. **Analyzing BERT's Knowledge of Hypernymy via Prompting**. In *Proceedings of the Fourth BlackboxNLP Workshop on Analyzing and Interpreting Neural Networks for NLP*. Punta Cana, Dominican Republic. Association for Computational Linguistics

3 Experience:

Research Assistant, Charles University, Institute of Formal and Applied Linguistics (Dec. 2021 – Ongoing)
- Researching the effect of reference translation quality on the reliability of machine translation metrics.

Intern, Charles University, Institute of Formal and Applied Linguistics (Mar. 2021 – Aug. 2021)
- Used prompting to probe BERT for knowledge of hypernyms of common words.
- Conducted empirical experiments comparing BERT's hypernym discovery performance to existing systems'.

Research Assistant, University of Chicago, Department of Linguistics (Jan. 2020 – Jun. 2020)
- Used unsupervised clustering to test if ELMo embeddings of polysemous words were embedded in distinct clusters in the embedding space; this could allow for unsupervised learning of word senses.
- Used zero-shot probing tasks to explore the relationship between BERT's (masked) language modeling abilities / pre-training and its high performance on down-stream tasks.

Software Engineering Intern, Orbital Insight (Boston) (Summer 2019)
- As part of a transition between geodata providers, used Python / scikit-learn to detect inaccurate geo-datapoints from the new data provider. This reduced by 10x the median error for datapoints.

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[1] These degrees are part of the Erasmus Mundus Language and Communication Technologies (LCT) dual-degree master's program. The 2020-2021 academic year took place at Charles University, and the 2021-2022 academic year is in progress at the University of Trento. Both degrees are expected in 2022.
[2] This paper was part of the Sixth Conference on Machine Translation (WMT 2021), which took place Nov. 10-11, 2021. Once the proceedings are published, the paper will be available on the ACL website.

- Wrote monitors in Python that both tracked and plotted trends in data, and sent alerts when anomalies were detected. Wrote Dockerfiles for easy deployment to Kubernetes.

Board Member, Board Manager (2019), Splash! Chicago (Sept. 2016 – Jun. 2020)
- Led Splash! Chicago, a volunteer student group that organizes large (100-student) educational events where high school students can learn from university students. Taught classes for Splash! Chicago in linguistics.

Grader, University of Chicago, Department of Computer Science (Fall 2018 – Summer 2020)
- Graded student projects, provided feedback regarding errors and areas to improve. Courses graded include Intro to CS, Intro to Comp. Systems, Comp. Architecture, Time Series Analysis and Stochastic Processes.

Student Programmer, University of Chicago STEM Education (Feb. 2018 - June 2018)
- Developed projects in Scratch to teach students (grades K-8) math and CS fundamentals.

4 SKILLS:

- **Programming and Markup Languages**: Python, C, LaTeX, Elm, Scratch
- **Human Languages**: English (native), Spanish (fluent), Korean (conversational)
- **Machine Learning Frameworks**: PyTorch, Tensorflow 2.0, scikit-learn

5 SCHOLARSHIPS & HONORS:

- **LCT Scholarship**: scholarship for funded master's study of computational linguistics (approx. €40,000 value)
- **Enrico Fermi Scholar:** top 5% of undergraduate major (computer science)
- **Georgiana Simpson Scholar:** top 5% of undergraduate major (linguistics)
- **Phi Beta Kappa**: academic achievement honors fraternity (top ~5% of overall undergraduate class)
- **Summa Cum Laude (Undergraduate)**