

VILÉM ZOUHAR

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EDUCATION



ETH Zürich

2022-present

PhD in Computer Science in **NLPED lab**

Advisors: Mrinmaya Sachan, Menna El-Assady

Thesis: Robustness-Aware Human-Centered NLP



UNIVERSITÄT
DES
SAARLANDES



university of
 groningen

Saarland University + Groningen University

(2 years) 2020 - 2022

MSc. in Language Science and Technology (scholarship)

Advisors: Dietrich Klakow, Gosse Bouma

Thesis **Shrinking Knowledge Base Size: Dimension Reduction, Splitting & Filtering**



Charles University in Prague

(3 years) 2017 - 2020

BSc. in Computer Science (+ classes in computational linguistics)

Advisor: Ondřej Bojar

Thesis **Enabling Outbound Machine Translation**



TECHNICAL KNOWLEDGE

GitHub



LANGUAGES

- **Programming:** Python, JS/TS, Rust, C/C++, R
- **Toolkits:** PyTorch, Scikit, Numpy, Huggingface, Marian NMT, Fairseq
- **Misc:** Linux (long-term user, GPU cluster etc), visualization, typesetting (Typst, LaTeX)

- Czech: C2
- English: C2
- German: B2
- + linguistic curiosity



TEACHING

- Semestral project supervision
- Large Language Models **materials contribution**
- Neural Networks Implementation and Applications **tutoring & materials**
- Statistical Natural Language Processing **tutoring & materials**
- A Collection of Machine Learning Exercises in R **materials only**

2023-present
summer semester 2023
winter semester 2021
summer semester 2021



WORK EXPERIENCE

- **Amazon Machine Translation** (research intern, quality estimation project) (4 months) 2023
- **Spoken Language Systems** group (student research assistant) (1 year) 2021-2022
 - University of Saarland, Germany
 - Information retrieval and language modelling efficiency
- **Institute of Formal and Applied Linguistics** (student research assistant) (3 years) 2019-2022
 - Charles University, Czech Republic
 - MT- and psycholinguistics-related projects (**Bergamot**/in-browser MT, **ELITR**)
- Previo (intern software dev, multilayer CMS) (3 months) summer 2018
- BIM Project (intern software dev, C++/Boost and C#) (3 months) summer 2017



SERVICE

- WMT Terminology Shared Task (organizer) 2023
- Reviewer: {EMNLP, ACL-IJCNLP, ACL, EACL} 2023, {SVRHM, CoNLL, ACL-IJCNLP} 2022
- **CSRR**: Workshop on Commonsense Representation and Reasoning (organizer) ACL 2022
- Evaluation committee member for granting university accreditations in Czechia (5 times) 2020-present




- ▶ **Tokenization and the Noiseless Channel** ACL 2023
Vilém Zouhar, Clara Meister, Juan Luis Gastaldi, Li Du, Mrinmaya Sachan, Ryan Cotterell
- ▶ **A Formal Perspective on Byte-Pair Encoding** ACL 2023
Vilém Zouhar, Clara Meister, Juan Luis Gastaldi, Li Du, Tim Vieira, Mrinmaya Sachan, Ryan Cotterell
- ▶ **Re-visiting Automated Topic Model Evaluation with Large Language Models** In review
Dominik Stambach, Vilém Zouhar, Alexander Hoyle, Mrinmaya Sachan, Elliott Ash
- ▶ **Enhancing Textbooks with Visuals from the Web for Improved Learning** In review
Janvijay Singh, Vilém Zouhar, Mrinmaya Sachan
- ▶ **PWESuite: Phonetic Word Embeddings and Tasks They Facilitate** In review
Vilém Zouhar, Kalvin Chang, Chenxuan Cui, Nathaniel Carlson, Nathaniel Robinson, Mrinmaya Sachan, David Mortensen
- ▶ **Multimodal Shannon Game with Images** Preprint
Vilém Zouhar, Sunit Bhattacharya, Ondřej Bojar
- ▶ **Poor Man's Quality Estimation: Predicting Reference-Based MT Metrics Without the Reference** EACL 2023
Vilém Zouhar, Shehzaad Dhuliawala, Wangchunshu Zhou, Nico Daheim, Tom Kocmi, Yuchen Eleanor Jiang, Mrinmaya Sachan
- ▶ **Sentence Ambiguity, Grammaticality and Complexity Probes** BlackboxNLP 2022
Sunit Bhattacharya, Vilém Zouhar, Ondřej Bojar
- ▶ **Stroop Effect in Multi-Modal Sight Translation** Preprint
Sunit Bhattacharya, Vilém Zouhar, Věra Kloudová, Ondřej Bojar
- ▶ **Fusing Sentence Embeddings Into LSTM-based Autoregressive Language Models** Preprint
Vilém Zouhar, Marius Mosbach, Dietrich Klakow
- ▶ **Knowledge Base Index Compression via Dimensionality and Precision Reduction** ACL Spa-NLP 2022
Vilém Zouhar, Marius Mosbach, Miaoran Zhang, Dietrich Klakow
- ▶ **EMMT: An eye-tracking, EEG and audio corpus for multi-modal reading and translation scenarios** Preprint
Sunit Bhattacharya, Věra Kloudová, Vilém Zouhar, Ondřej Bojar
- ▶ **Neural Machine Translation Quality and Post-Editing Performance** EMNLP 2021
Vilém Zouhar, Ondřej Bojar, Martin Popel, Aleš Tamchyna
- ▶ **Providing Backtranslation Improves Users Confidence in MT, Not Quality** NAACL 2021
V. Zouhar, M. Novák, M. Žilínek, O. Bojar, M. Obregón, R. L. Hill, F. Blain, M. Fomicheva, L. Specia, L. Yankovskaya
- ▶ **Artefact Retrieval: Overview of NLP Models with Knowledge Base Access** AKBC CSKB 2021
Vilém Zouhar, Marius Mosbach, Debanjali Biswas, Dietrich Klakow
- ▶ **Sampling and Filtering of Neural Machine Translation Distillation Data** NAACL SRW 2021
Vilém Zouhar
- ▶ **Leveraging Neural Machine Translation for Word Alignment** PBML 116
Vilém Zouhar, Daria Pylypenko
- ▶ **WMT20 Document-Level Markable Error Exploration** WMT20
Vilém Zouhar, Tereza Vojtěchová, Ondřej Bojar
- ▶ **Extending Ptakopět for MT User Interaction Experiments** PBML 115
Vilém Zouhar, Michal Novák
- ▶ **Outbound Translation User Interface Ptakopet: A Pilot Study** LREC 2020
Vilém Zouhar, Ondřej Bojar
- ▶ **Evaluating Optimal Reference Translations** In review
Vilém Zouhar, Věra Kloudová, Martin Popel, Ondřej Bojar

MISC. PROJECTS

- **Metaphor Preservation in Machine Translation and Paraphrasing** 2023
Report/essay on preserving metaphors in modern NLP
- **Dorfromantik solver** 2023
A tool to optimize a game
- **Ryanize bib** 2023
Tool to check for common bib best practice violations
- **Poetry, Songs, Literature, Legalese and Translationese** 2023
Essay on Automated Sentence Complexity Perspective
- **Stolen Subwords** 2023
Report on Importance of Vocabularies for Machine Translation Model Stealing
- **Bilingual scientific abstracts corpus** 2022
Bilingual Czech and English abstracts of ÚFAL papers
- **Machine Translate** 2022
Open resources and community for machine translation (contributor)
- **Random Strum Pattern Generator** 2022
Generate random strum patterns to learn guitar strumming
- **Deep Molecule QSPR** 2021
Collaboration with Nikola Kalábová on predicting key temperature points (e.g. boiling point) of molecules.
- **Fact Learning with Adaptive Color Palette: Effect of Stimuli-Independent Hints** 2021
An experiment with enhancing fact learning experience in collaboration with Leander van Boven, Tianyi Li and Anjali Nair.
- **Hyperparameters of RNN Architectures for POS Tagging using Surface-Level BERT Embeddings** 2020
Final project for neural network class.
- **SlowAlign** 2020
IBM model-based word aligned with extra features and heuristics. Written in Rust.
- **Slow Align Displayer** 2020
Creates quick graphs given word alignment (in the Pharaoh format).
- **MosQEto** 2019
Collaboration with Ondřej Měkota on synthesising machine translation quality estimation data.
- **Call for Menza** 2019
Aggregator of daily menus around the Faculty of Mathematics and Physics. Unmaintained since I moved out of Prague.
- **SMAKE** 2019
Simple Markable And Keyword Extraction in Rust. Contributions by Petr Houška.
- **TNTranslator** 2019
Translation Inspector for n-best list navigator task at Bergamot.
- **ZimaDB** 2018
SQLite-like database implementation from scratch in C++ in collaboration with Petr Chmel.
- **ASM Hell** 2017
Learn basic assembly instructions through a game (LD41 submission).
- **Prolog KNN** 2017
Implementation of kNN in Prolog, a language the least suited for this.

EXTRA-CURRICULAR

- Academic senate at Charles University Faculty of Mathematics and Physics 2018-2020
- Several **games** programmed and presented in limited time, mostly Ludum Dare 2015-present
- Organization of **Kasiopea**, an annual coding competition for talented high school students 2017-2019
- Electric guitar  2021-present