

Green Research

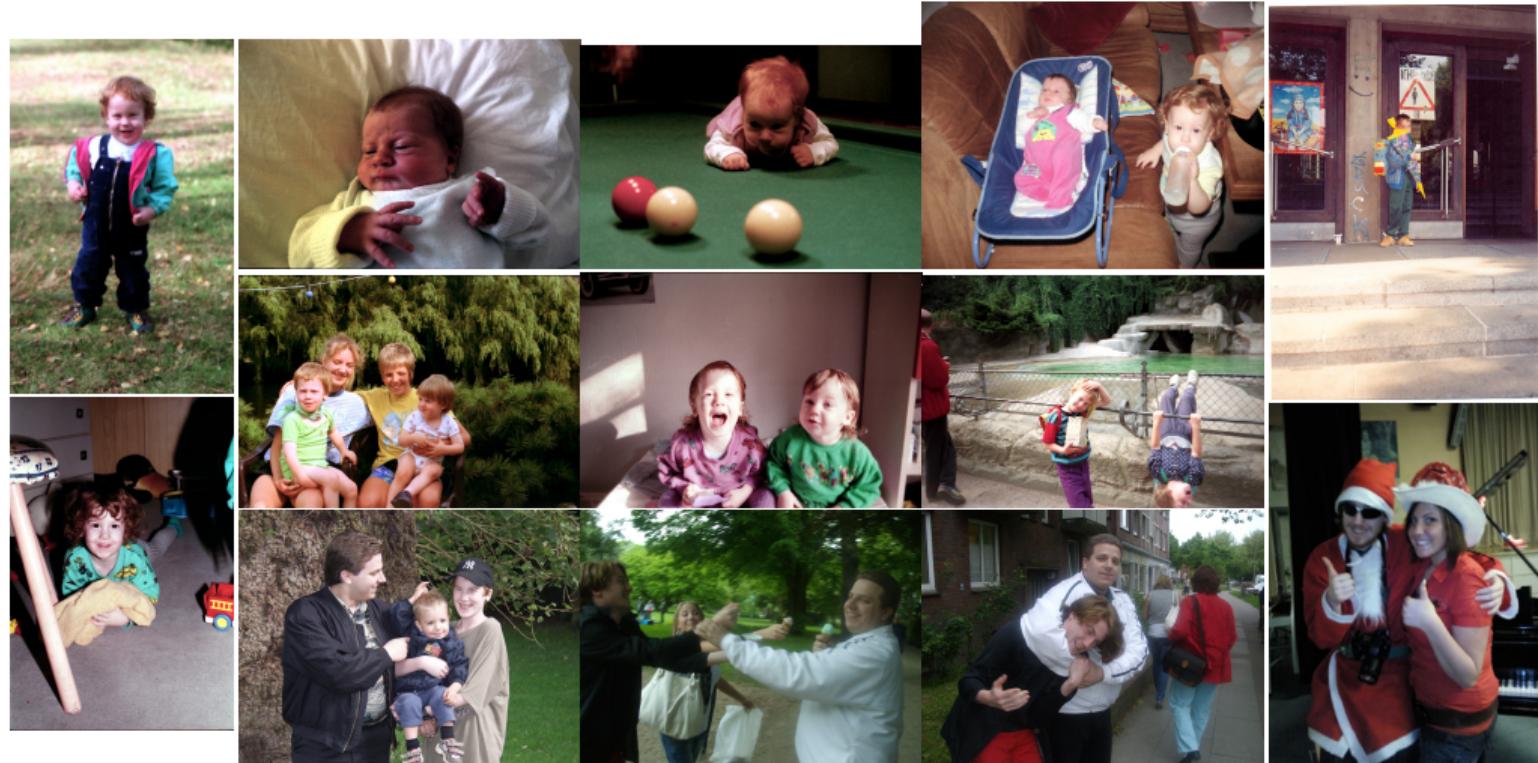
Green as more than just a Color

Christian Schuler

Study Life & Projects
University of Hamburg and beyond

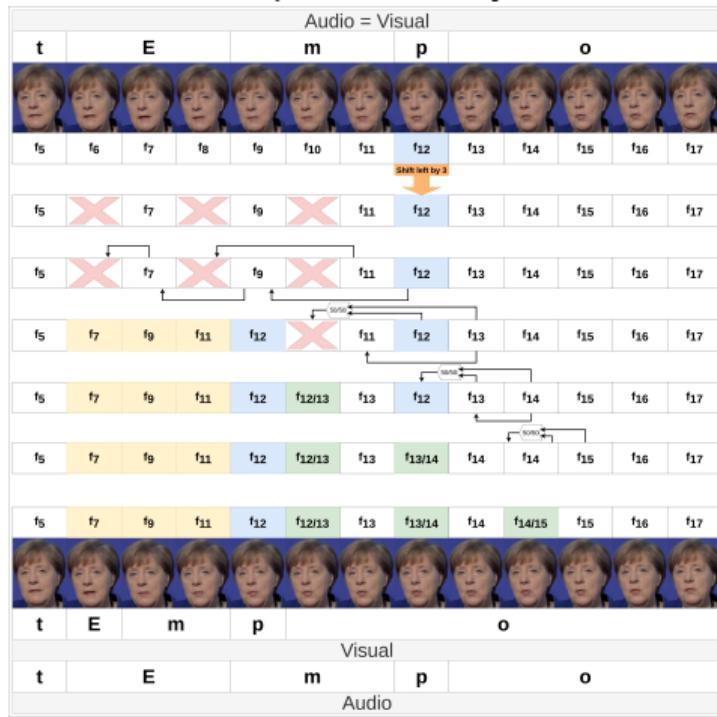
March 25, 2025

Introduction - Growing Up In Hamburg



Bachelor's Thesis (2022) I

■ Title: Perceptual Quality Assessment of Lip-Synchrony in Dubbing



Christian
Schuler



Dr. Timo
Baumann*

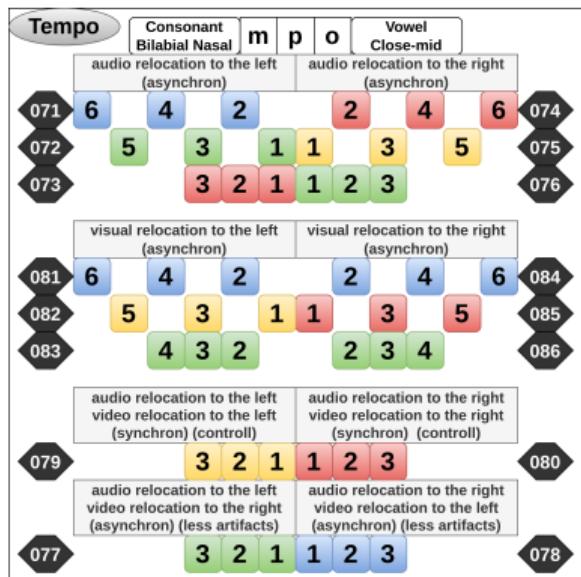


Prof. Timo
Gerkmann

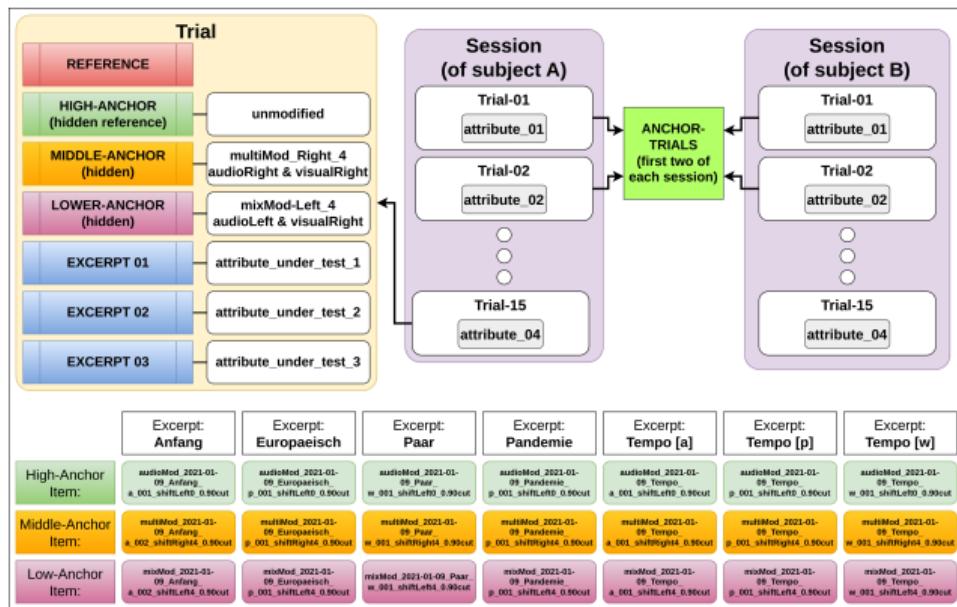
* since 2022 Professor.

Bachelor's Thesis (2022) II

Study Setup



Anchor Items



Bachelor's Thesis Fallout I

- Natural Language Processing mit Neuronalen Netzen
(Baumann and Schuler, 2022) Linux Article
- Lip-Synched
(Baumann and Schuler, 2023) Linux Article



Christian



Timo

• StudyToolkitVid

A toolkit for creating studies to evaluate quality of videos.



Christian & Dominik

Bachelor's Thesis Fallout II

Neural audio-visual synchrony evaluation

- A Deep Dive Into Neural Synchrony Evaluation for Audio-visual Translation
(Nayak et al., 2022)



Shravan Christian Debjoy Timo

Linguistic information in pauses

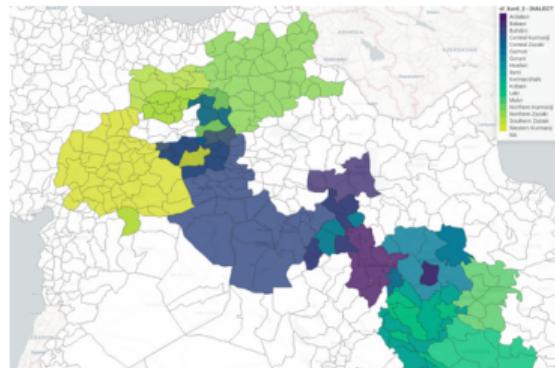
- Can We See Your Response Before You Speak? Exploring Linguistic Information Found in Inter-Utterance Pauses
(Schuler et al., 2024)



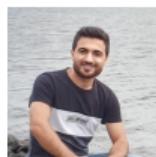
Christian Shravan Debjoy Timo

Master's Thesis Build-up I

- Towards a Complete Mapping of Kurdish Dialectology
(Schuler and Ahmad, 2023) Poster as ICKL6

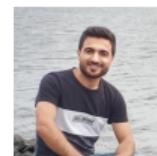
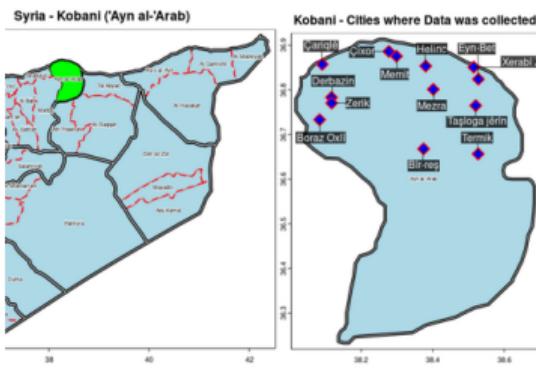


Christian



Raman

- Analysis of Phonology and Morphology in the Kobani Dialect
(Ahmad and Schuler, 2023) Poster as ICKL6



Raman



Christian

Master's Thesis Build-up II

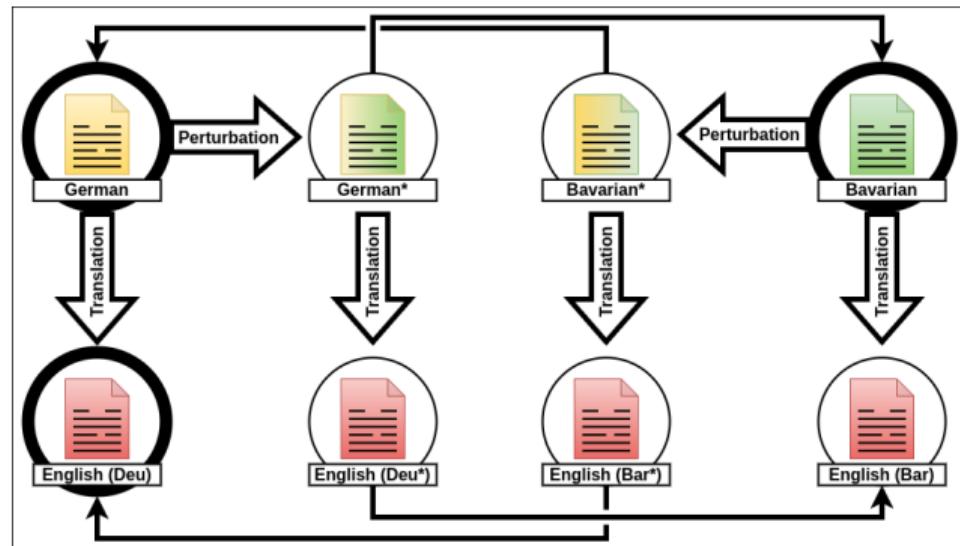
- MTACR - Multilingual Text As Corpus Repository



Tania, Christian, Myy, Raman

Master's Thesis (2024) I

- Title: Leveraging Morphological and Lexical Features in Synthetic Data Generation for Dialect-Specific Machine Translation



Christian
Schuler



Dr. Sina
Ahmadi

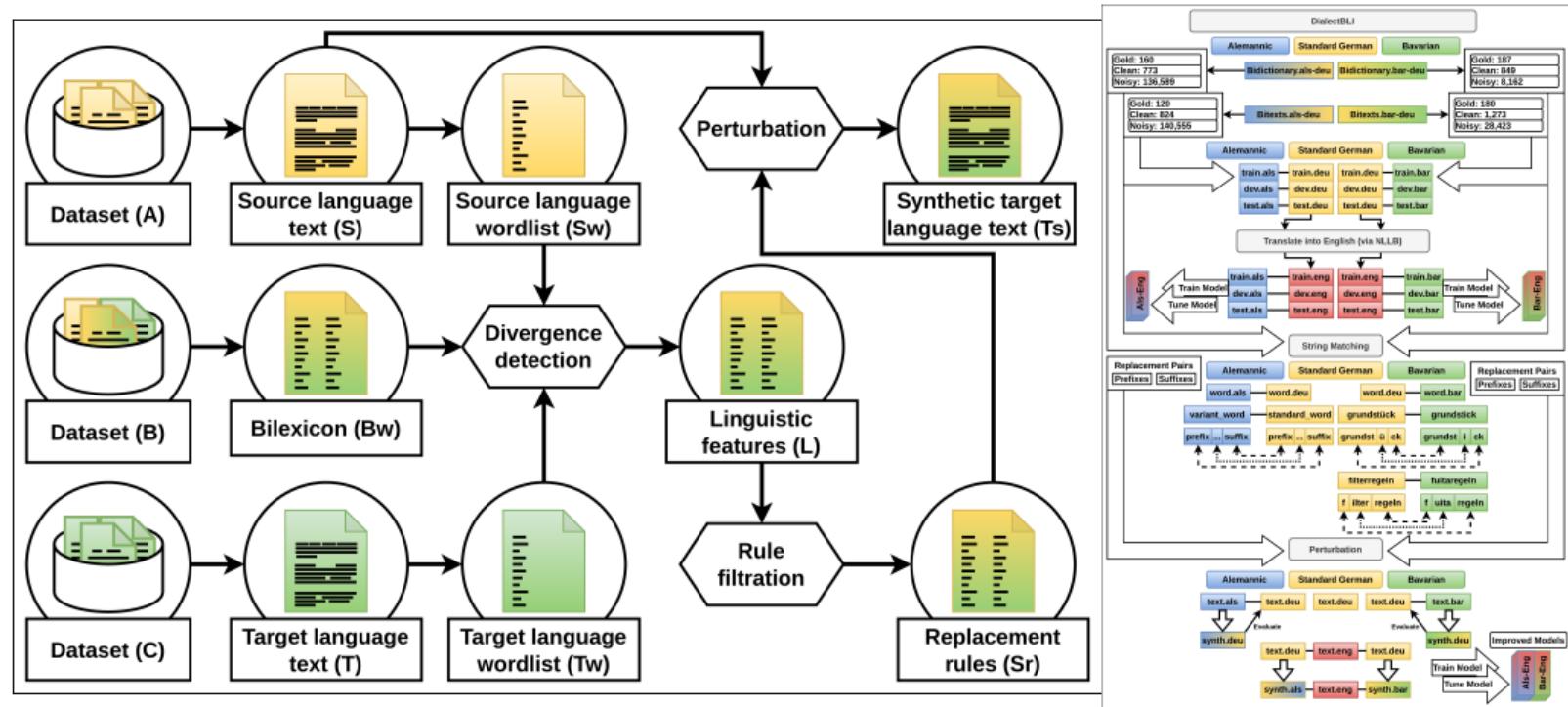


Dr. Seid
Muhie Yimam Biemann

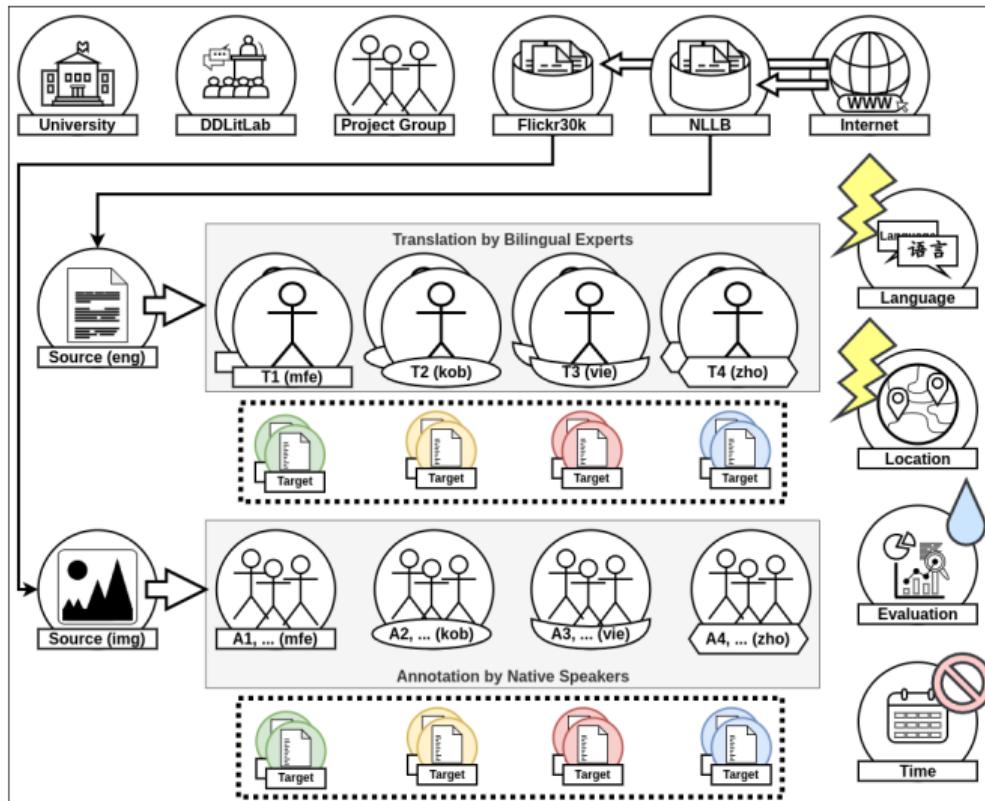


Prof. Chris
Biemann

Master's Thesis (2024) II



MTACR I - Overview



MTACR II - Motivation

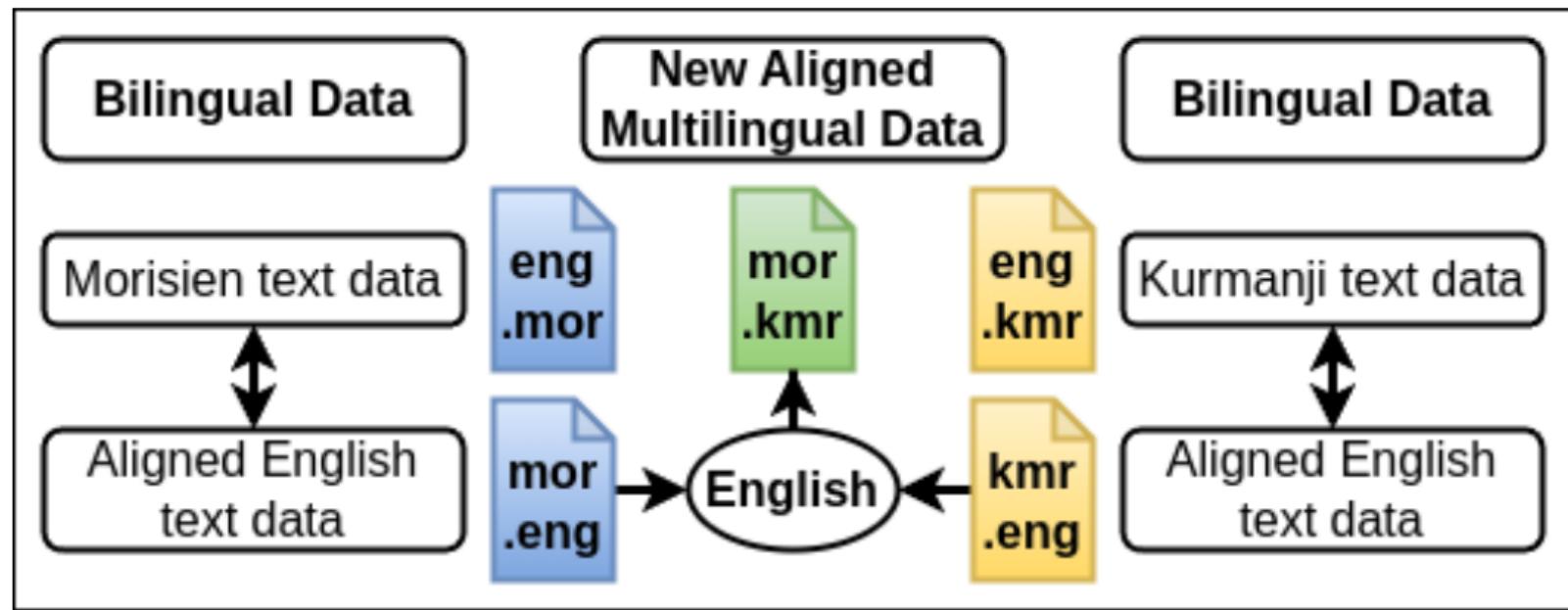
German	Ich mag die Farbe Grün, esse gerne Pizza, und meine Schwester wohnt in Österreich.
English	I like the color green, I like eating pizza, and my sister lives in Austria. 
Chinese	我喜欢绿色，我喜欢吃披萨，我姐姐住在奥地利
Chinese (Pinyin)	Wǒ xǐhuān lǜsè, wǒ xǐhuān chī pīsà, wǒ jiějiě zhù zài àodìlì. 
Vietnamese	Tôi thích màu xanh lá cây, tôi thích ăn pizza và chị gái tôi sống ở Áo.
	Tôi thích màu xanh, tôi thích ăn pizza và chị gái của tôi sống nước Áo. 
Kurdish <i>Sorani Kurmanji?</i>	Ez ji rengê kesk hez dikim, ez ji xwarina pizza hez dikim, û xwişka min li Avusturya dijî.
	Ez ji rengê kesk hez dikim, ez ji xwarina pîzayê hez dikim, û xwişka min li Awistiryayê dijî 
Morisien	...  Kobani ...  ~7000 more ... 

Figure: Translation Systems (Here Google Translate) Failing Languages.

MTACR III - Focus Languages



MTACR IV - Pivot Languages



MTACR V - Annotation Tasks with Potato Tool

Mô tả hình ảnh bằng tiếng Việt

test@test

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- A. Projections are a subject of several pure mathematical fields, including differential geometry, projective geometry, and manifolds.
- B. Rather, any mathematical function that transforms coordinates from the curved surface distinctly and smoothly to the plane is a projection.
- C. The Earth and other large celestial bodies are generally better modeled as oblate spheroids, whereas small objects such as asteroids often have irregular shapes.

Please translate the 3 sentences from the above text one by one.

For A:

For B:

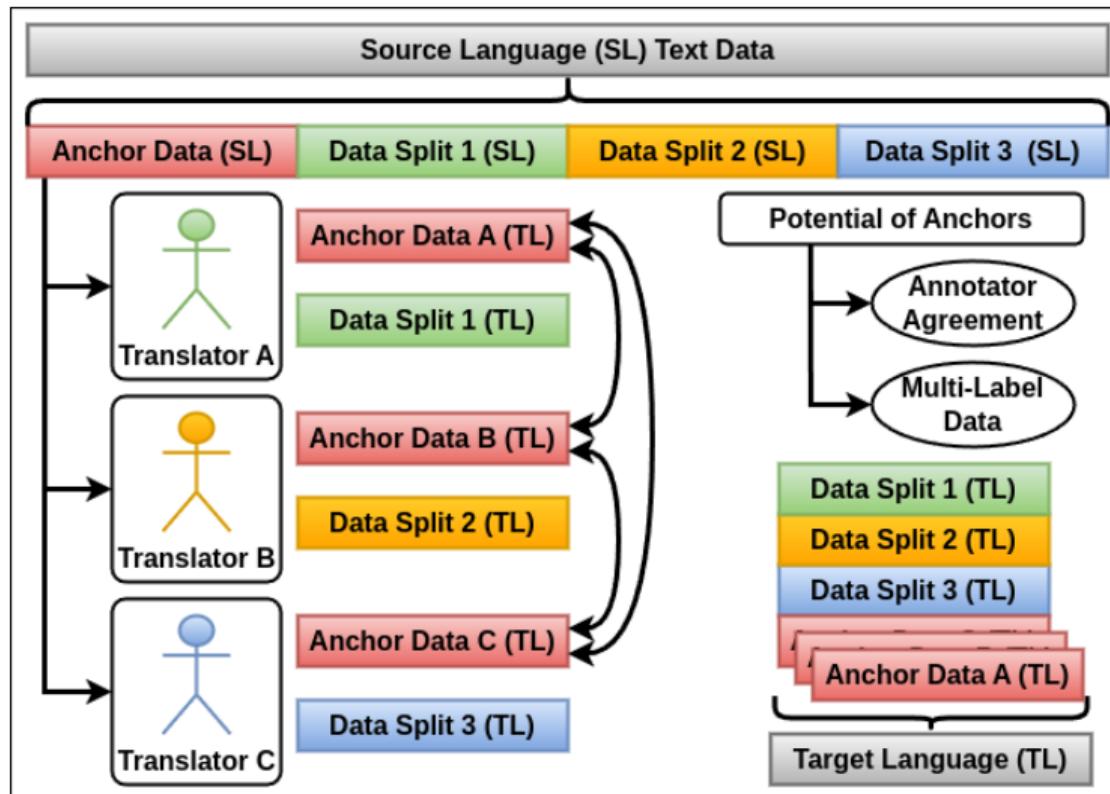
For C:



Hãy mô tả nội dung hình ảnh trong một câu và sử dụng tiếng Việt.

Sự miêu tả: Một người đàn ông mặc quần jeans, tóc nâu và đeo kính chơi ghi-ta

MTACR VI - Anchor Items



MTACR VII - Fun with Expert Translators

3 English sources

- "0293": "There must be something in my tone of voice, or this arrogant face—something that antagonizes everybody."
- "0294": "In spite of his success, Warner Bros. had no interest in raising Bogart's profile."
- "0295": "Bogart used these years to begin developing his film persona: a wounded, stoical, cynical, charming, vulnerable, self-mocking loner with a code of honor."

2 Vietnamese targets

- "0293": "Bất chấp thành công của mình, hãng Warner Bros. thể hiện ít sự quan tâm trong việc nâng cao vị thế của Bogart."
- "0294": ???
- "0295": "Bogart bắt đầu hình thành nhân vật điện ảnh của mình trong những năm này, chế tác một nhân vật bị tổn thương, khắc khổ, hoài nghi, quyến rũ, dễ bị tổn thương và tự chế giễu, nhưng duy trì một quy tắc danh dự."

1 English source

- "0040": "Lloyd and Roach parted ways in 1924, and Lloyd became the independent producer of his own films."

2 Vietnamese targets

- "0040": "Lloyd và Roach chia tay nhau vào năm 1924. Sau đó, Lloyd trở thành nhà sản xuất độc lập cho các bộ phim của riêng mình."
- "0040": "Lloyd và Roach đường ai lối khác vào năm 1924, và Lloyd bắt đầu tự sản xuất phim."

Corpus Statistics (Flickr30k-based Data)

Language	#Sent	Min/Avg/Max Sent	#Token (unique)	Min/Avg/Max Token	Char (unique)	CJK Ratio
MTACR						
Morisien	169	3 / 8.73 / 20	1476 (509)	1.00 / 4.08 / 40.00	7326 (53)	N/A
Vietnamese	563	3 / 8.77 / 34	4940 (896)	1.00 / 3.43 / 11.00	21338 (119)	N/A
Chinese	326	4 / 13.22 / 32	4309 (649)	1.00 / 1.00 / 1.00	4309 (649)	1.0
Kobani	193	2 / 9.32 / 26	1798 (624)	1.00 / 4.24 / 14.00	9221 (57)	N/A
Expansion of Flickr30k by previous publications						
Ukrainian	29847	2 / 9.32 / 36	278072 (27791)	1.00 / 5.52 / 26.00	1783635 (155)	N/A
Czech	31014	2 / 9.05 / 33	280756 (31269)	1.00 / 4.92 / 22.00	1632401 (102)	N/A
French	31014	3 / 12.48 / 43	387071 (17563)	1.00 / 4.73 / 21.00	2186649 (98)	N/A
Brazilian	155070	3 / 13.39 / 57	2075655 (31511)	1.00 / 4.71 / 21.00	11692809 (118)	N/A
Japanese	155066	1 / 29.70 / 187	4605660 (2465)	1.00 / 1.00 / 1.00	4605660 (2465)	0.97
English	186084	2 / 12.21 / 78	2272077 (34369)	1.00 / 4.23 / 30.00	11695581 (90)	N/A
Dutch	2014	1 / 9.76 / 26	19654 (3556)	1.00 / 4.66 / 23.00	109228 (74)	N/A
Chinese	155064	3 / 21.09 / 141	3269702 (3441)	1.00 / 1.00 / 1.00	3269702 (3441)	0.97
German	31014	1 / 11.12 / 39	344856 (25854)	1.00 / 5.44 / 36.00	2189117 (98)	N/A

Corpus Statistics (NLLB-based Data)

Language	#Sent	Min/Avg/Max Sent	#Token (unique)	Min/Avg/Max Token	Char (unique)	CJK Ratio
MTACR						
Morisien	472	5 / 25.40 / 82	11990 (3571)	1.00 / 5.10 / 30.00	72671 (96)	N/A
Vietnamese	7795	5 / 31.32 / 117	244108 (15036)	1.00 / 3.59 / 27.00	1113026 (272)	N/A
Chinese	301	13 / 40.92 / 162	12318 (1154)	1.00 / 1.00 / 1.00	12318 (1154)	0.93
Kobani	244	5 / 21.91 / 70	5345 (2544)	1.00 / 5.01 / 29.00	31870 (98)	N/A
Created by Machine Translation Systems						
Morisien	15522	1 / 24.63 / 381	393910 (36195)	1.00 / 4.71 / 41.00	2235173 (222)	N/A
Ukrainian	25204	1 / 18.52 / 67	466772 (81652)	1.00 / 6.33 / 305.00	3394792 (306)	N/A
Vietnamese	19975	1 / 31.33 / 351	870104 (23655)	1.00 / 3.57 / 306.00	3950079 (345)	N/A
Kurmanji	19110	1 / 23.13 / 202	441959 (53750)	1.00 / 4.98 / 597.00	2622341 (310)	N/A
Sorani	12626	1 / 20.00 / 309	252502 (45967)	1.00 / 5.92 / 147.00	1734599 (567)	N/A
Czech	25107	1 / 18.79 / 56	471857 (59511)	1.00 / 5.99 / 32.00	3271820 (236)	N/A
French	25204	2 / 24.76 / 86	624006 (38404)	1.00 / 5.52 / 498.00	4045579 (222)	N/A
Japanese	25108	8 / 70.63 / 1234	1773259 (2738)	1.00 / 1.00 / 1.00	1773259 (2738)	0.83
Russian	6481	3 / 19.10 / 59	123818 (40083)	1.00 / 6.71 / 31.00	947807 (211)	N/A
English	6193	5 / 22.02 / 62	136371 (26649)	1.00 / 5.42 / 33.00	869822 (207)	N/A
Tamil	6481	1 / 16.24 / 51	105245 (34399)	1.00 / 8.47 / 75.00	989929 (771)	N/A
Italian	240	8 / 22.20 / 44	5329 (1013)	1.00 / 5.72 / 18.00	35555 (87)	N/A
Friesisch	6193	4 / 22.22 / 65	137618 (27979)	1.00 / 5.60 / 39.00	902486 (204)	N/A
Chinese	28554	5 / 42.26 / 514	1219428 (3266)	1.00 / 1.00 / 1.00	1219428 (3266)	0.94
German	25204	3 / 21.40 / 68	539246 (54054)	1.00 / 6.41 / 46.00	3968958 (225)	N/A
Kobani	144	1 / 21.69 / 73	8417 (3800)	1.00 / 5.12 / 44.00	51107 (268)	N/A
Luxembourgish	6337	2 / 21.58 / 65	136729 (30127)	1.00 / 6.07 / 45.00	960476 (208)	N/A

Corpus Statistics (NLLB-based Data - MT in Detail)

System	zho	ces	eng	fra	fry	deu	ita	jap	kob	kmr	ltz	mfe	rus	ckb	tam	ukr	vie
ModernMT,	48	48	-	48	-	48	-	48	-	48	48	-	48	48	48	48	48
Niutrans	48	48	-	48	-	48	-	48	-	48	48	48	48	48	48	48	48
Google	6193	6193	-	6193	6193	6193	-	6193	-	6193	6193	6193	6193	6193	6193	6193	6193
Tower	48	48	-	48	-	48	48	48	48	48	48	48	48	48	48	48	48
Bing	48	-	-	-	-	-	-	-	-	48	-	48	-	48	48	48	48
Systran	48	47	-	48	-	48	48	48	-	-	-	-	-	-	48	48	48
Tilde	-	48	-	48	-	48	48	48	-	48	-	-	48	48	48	48	48
DeepSeek	48	-	-	48	-	48	-	-	48	48	-	48	-	-	-	48	48
Argos	6193	6193	-	6193	-	6193	-	6193	-	-	-	-	-	-	-	6193	-
Perplexity	48	48	-	48	-	48	48	48	-	48	-	48	48	-	-	-	48
Kimi	48	-	-	48	-	48	-	-	48	48	-	48	-	-	-	48	48
NLLB	6193	6193	-	6193	-	6193	-	6193	-	6193	-	-	-	6193	-	6193	6193
DeepL	48	48	-	48	-	48	48	48	-	-	-	-	48	-	-	48	-
Marian	6193	6193	-	6193	-	6193	-	6193	-	-	-	6193	-	-	-	6193	6193
Claude	2616	-	-	-	-	-	-	-	-	3370	-	427	-	-	-	-	741
Translitz	48	-	-	-	-	-	-	-	-	48	-	-	-	-	-	-	48
ChatGPT	686	-	-	-	-	-	-	-	-	2922	-	2421	-	-	-	-	175
Reference	-	-	6193	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Bilingual Lexicon Induction

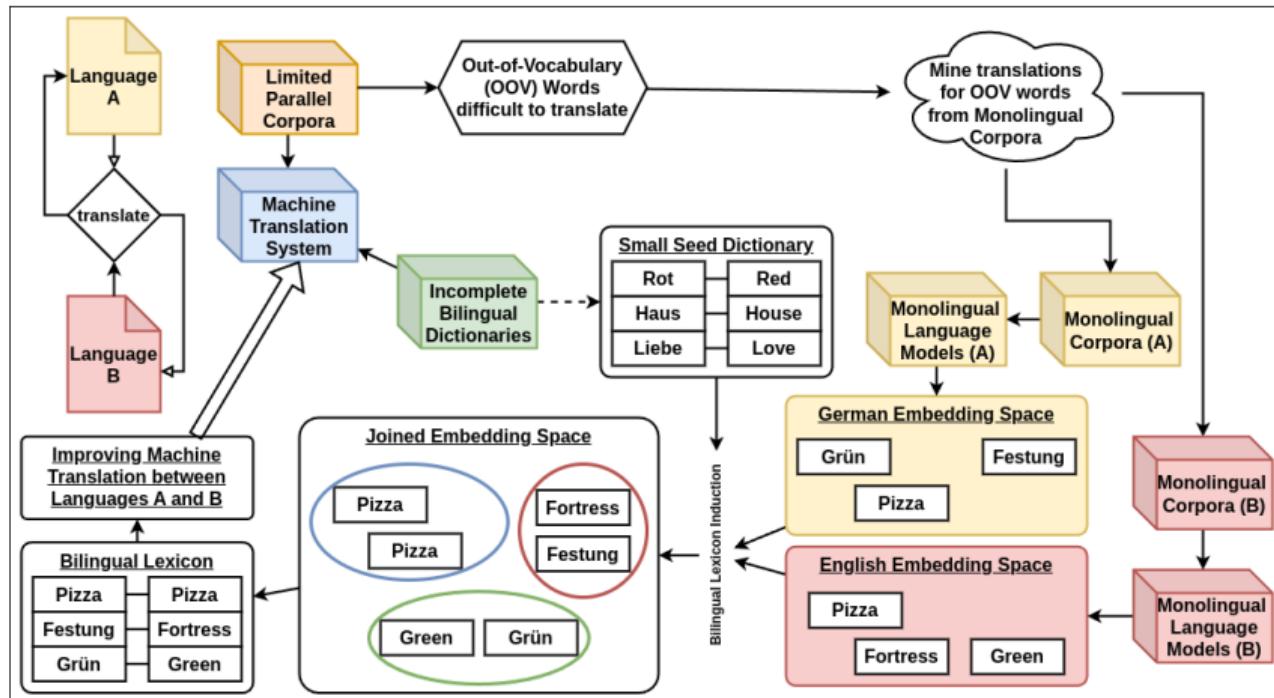
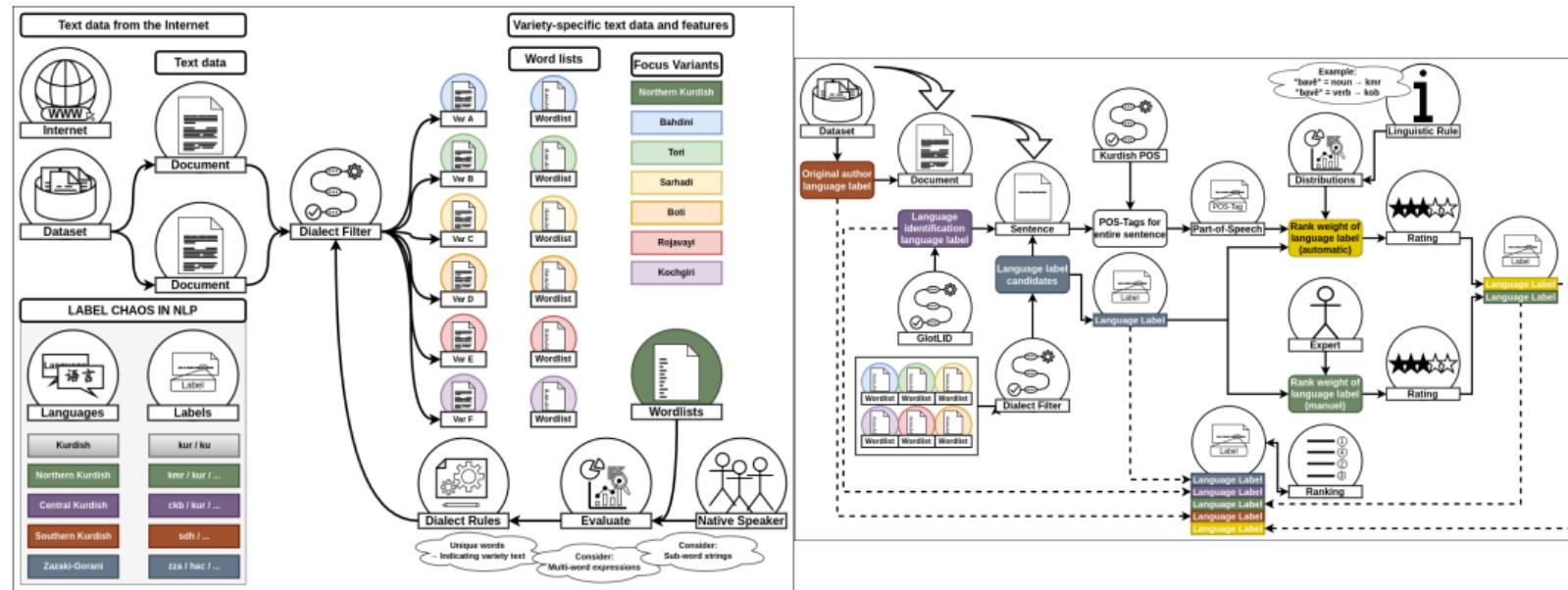


Figure: Inspiration for this figure: (Wang et al., 2021) and (Irvine and Callison-Burch, 2017).

Dialect Filters - Dialect (Multi-)Labels



La Ende

Open for questions (and cake?) !

References I

- Ahmad, R. and Schuler, C. (2023). Analysis of phonology and morphology in the kobani dialect.
- Baumann, T. and Schuler, C. (2022). Natural language processing mit neuronalen netzen.
- Baumann, T. and Schuler, C. (2023). Lip-synched » linux magazine.
- Nayak, S., Schuler, C., Saha, D., and Baumann, T. (2022). A deep dive into neural synchrony evaluation for audio-visual translation. In Proceedings of the 2022 International Conference on Multimodal Interaction, pages 642–647. Association for Computing Machinery, New York, NY, USA.
- Schuler, C. and Ahmad, R. (2023). Towards a complete mapping of kurdish dialectology.
- Schuler, C., Nayak, S., Saha, D., and Baumann, T. (2024). Can we see your response before you speak? exploring linguistic information found in inter-utterance pauses. page 8396 KB.

Example I: Flickr30k-0001



Kobani

- "mêrkek bi kombrêsê erdê xerab dikê"

Morisien

- "enn missier p craze simin avec so machine craz roche"

Vietnamese

- "Một công nhân xây dựng đang làm việc với một búa khoan."
- "Anh ấy đang phá dỡ đường"

Chinese

- "一名工人正在拆除房屋前面的水泥路面"

Example II: NLLB-0001

English (Original Text)

- "Lillian Diana Gish (October 14, 1893 – February 27, 1993) was an American actress, director and screenwriter."

Morisien

- "Lillian Diana Gish (inn ne 14 Oktob 1893 – inn mor 27 Fevrie 1993) li ti enn akter, enn realizater ek enn senaris Amerikenn."
- "Lillian Diana Gish (14 Oktob 1893 - 27 Fevriye 1993) ti enn aktris, realizatris ek senarist amerikenn."

Vietnamese

- "Lillian Diana Gish, sinh ngày 14 tháng 10 năm 1893 và mất ngày 27 tháng 2 năm 1993, là một nữ diễn viên, đạo diễn và biên kịch người Mỹ."
- "Lillian Diana Gish (14/10/1893 – 27/2/1993) là một nữ diễn viên, đạo diễn, biên kịch người Mỹ."
- "Lillian Diana Gish (14/10/1893 – 27/02/1993) là một nữ diễn viên, đạo diễn và nhà biên kịch người Mỹ."

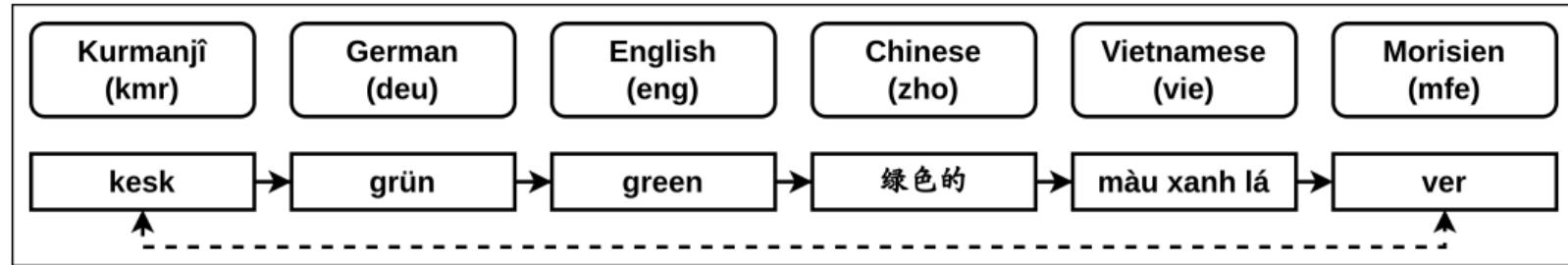
Kobani

- "Lillian Diana Gish (14'î mehê 10'an 1893 - 27'î mehê didîyan 1993) lîstikvan, derhêner û sînaronivîseke Emrîkî bû."
- "Lilian Diana Gish (14î meha dehan, 1893 - 27î meha didiyan , 1993) lîstikvan, derhêner, û senarîsteke Emrîkî bû."

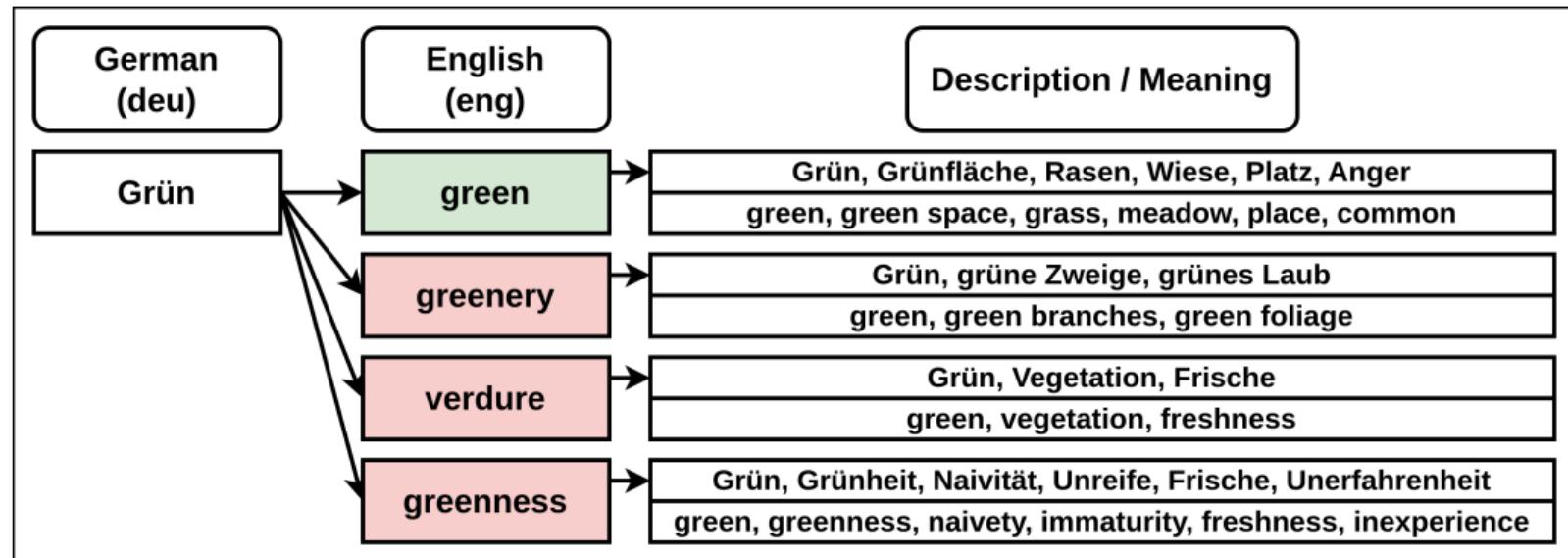
Chinese

- "莉莲·戴安娜·吉什（1893年10月14日-1993年2月27日），美国女演员、导演和编剧。"
- "莉莲·戴安娜·吉什（1893年10月14日 – 1993年2月27日）是一位美国女演员、导演和编剧。"
- "莉莉安·黛安娜·吉许（1893年十月十四日-1993年二月27日）是一个美国演员，导演和编剧。"

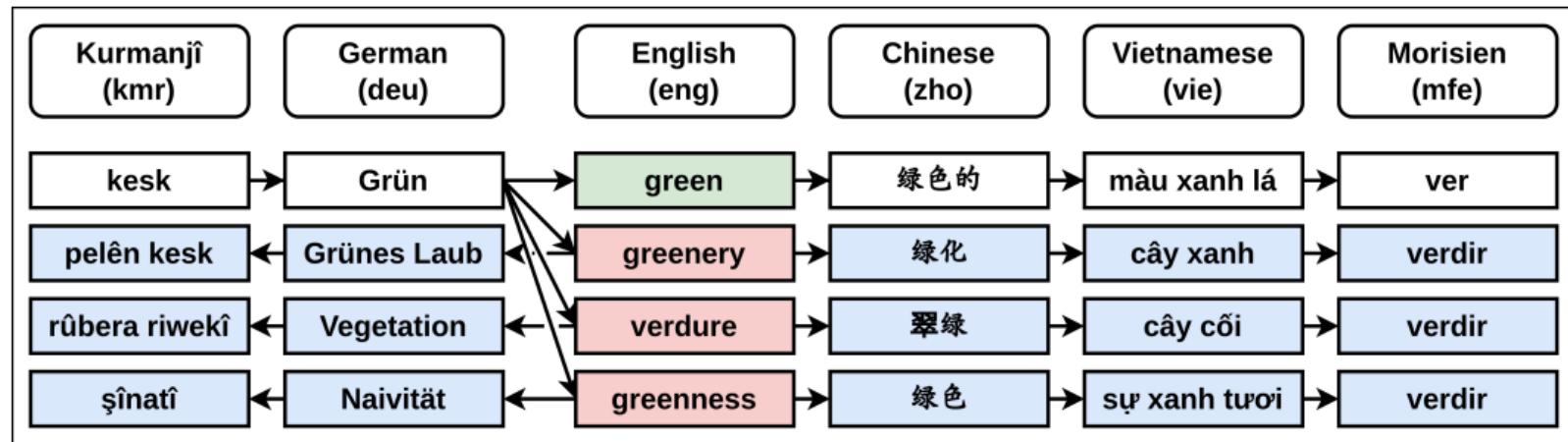
Language Ambiguity I



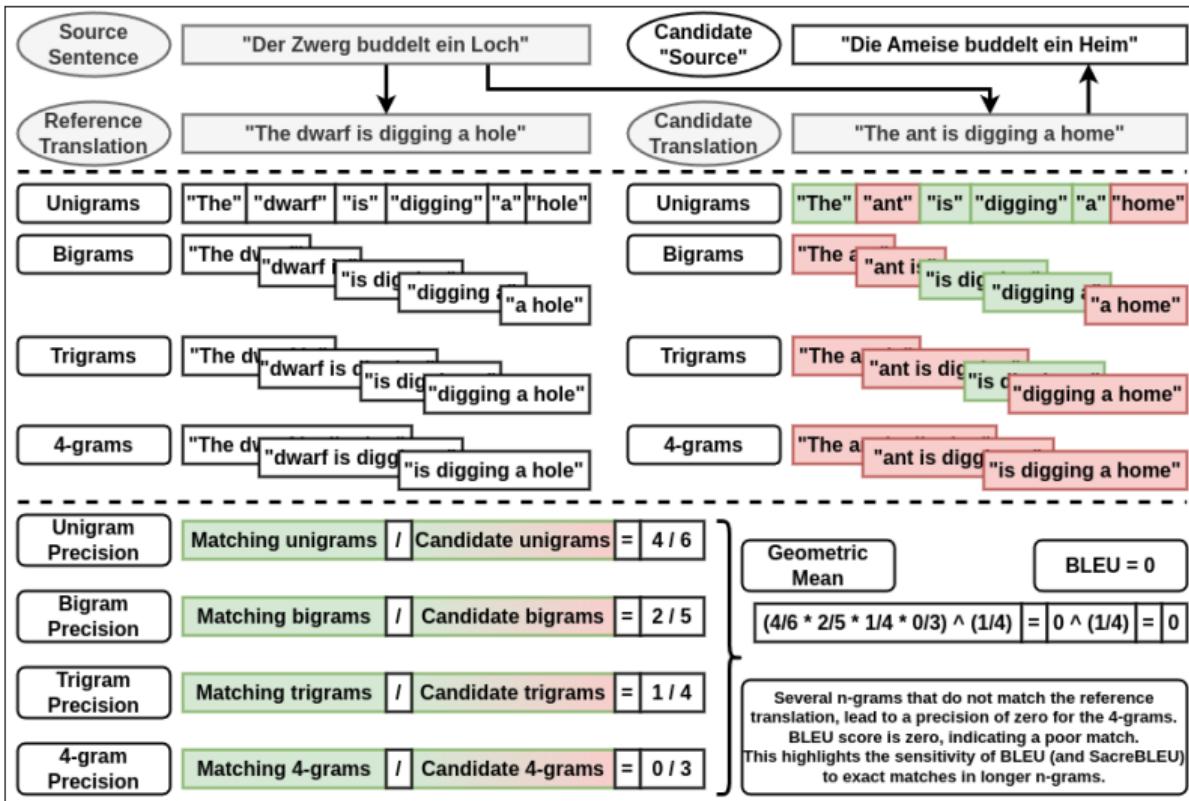
Language Ambiguity II - Limitation?



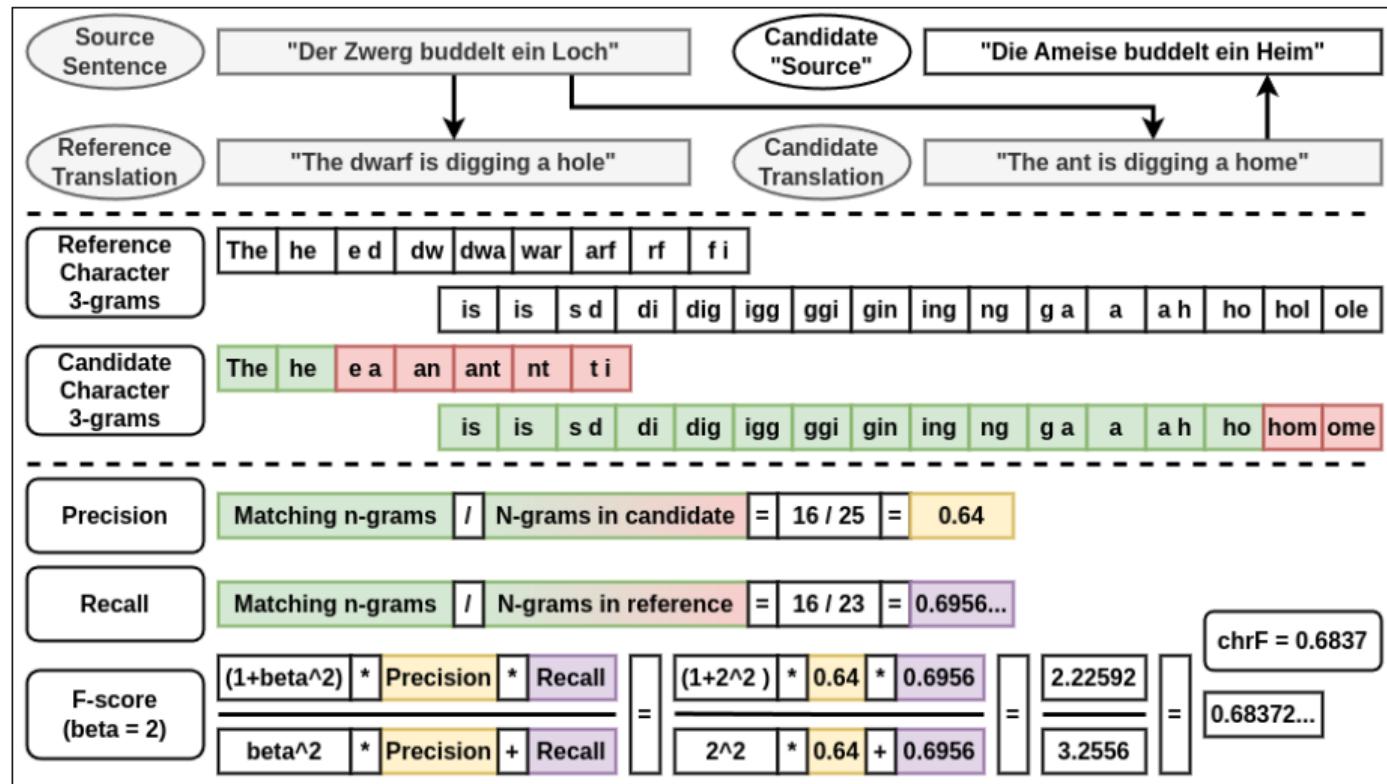
Language Ambiguity III - Potential?



MT Evaluation - BLEU



MT Evaluation - chrF



MT Evaluation - TER

