## Limitations, Future Work, and Conclusion









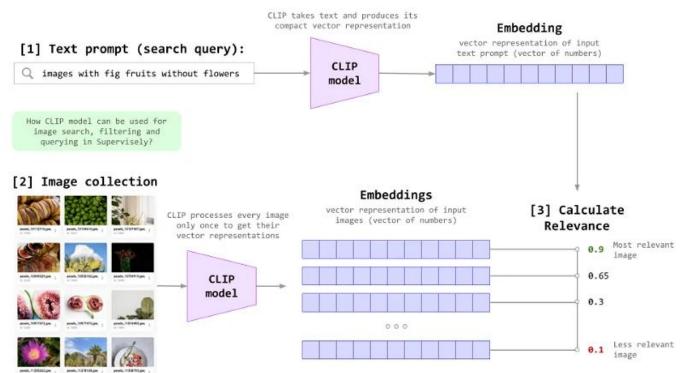
### Limitations



- **Assumption:** Vendor handles Amsterdam007 and amsterdam007 belongs to one entity.
- **LLMs:** The use of chatGPT based automated systems for drafting advertisements can eliminate the individual stylometric features.
- Architectural limitation: Bigger architecture can lead to better performances.
- Content-control AA: Identifying stylometric features within a trade category may provide better representations. However, it requires either handcrafted trade labels or a classifier to identify trade categories from the text advertisements. The latter can lead to bottleneck issues.
- **Scalability:** Zero-shot capabilities of these approaches needs to be tested. Requires collecting of data from a diverse set of websites.
- **XAI:** Different frameworks lead to different explanations. A qualitative reliability test needs to be performed.
- <u>Environmental Impact</u>: Training transformers-based architecture leads to huge carbon emission and power consumption. Knowledge-Distillation to smaller architectures can help.
- Ethical and Privacy Consideration: Application of AA to sensitive applications (connecting HT vendors on escort markets) and processing of personal data could lead to harm on individuals.

#### **Future Research**





## Conclusion



- What is Authorship Attribution? How can it be applied to DarkNet Markets
- Guidelines to Responsible Authorship Approaches
- Data Analysis and Traditional Stylometric Approaches.
- Authorship Identification as the Classification Task: BoW, traditional NNs, and Contextualized models.
- Authorship Verification as the Ranking Task: FAISS similarity
- Model Explainability
- Limitations and Future Research



# VendorLink: An NLP approach for Identifying & Linking Vendor Migrants & Potential Aliases on Darknet Markets





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# IDTraffickers: An Authorship Attribution Dataset to link and connect Potential Human-Trafficking Operations on Text Escort Advertisements









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