# Discovering Latent Information from Noisy Sources in the Cultural Heritage Domain

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1. Introduction

- Multiple data sources exist for the Cultural heritage domain
- The availability of publicly available information related to the cultural heritage domain can be improved with tools capable of signaling to the various classes of users the entities in the domain and their relations.

#### 2. Cultural Heritage Domani ER diagram



# 3. Domain Exploration and Research Question

• The ER diagram highlights the existence of latent (LTNT) relations. How to highlight/detect them?

#### 4. Can Social Media Help?

- Potentially can provide information/context
- Challenges: messages are short and can contain errors.

#### 5. Multi Modal Approach

- Social media messages are associated with images, can they be leveraged?
- In theory they can provide context, but <u>their</u> diversity can be an obstacle

#### 6. A Specific Task: Entity Recognition

- A first specific task can be recognize specific entities inside the messages such as Artist, artworks, venues, artistic movements
- Dataset composed by Twitter messages and related images

# 7. Entities in Message: example





# 10. Conclusion and Future Work

- Future work will include
- Further exploration of cross attention multi modal algorithms
- building a sufficiently large corpus to train and evaluate algorithms and tackle latent information extraction tasks

#### 8. Multi Modal Cross Attention

- Attention: a mechanism by which a network can capture interaction among elements
- Multi modal Cross-attention extends to elements from different domains

#### 9. Three Models

- Model (A) uses only the text messages.
- Model (B) uses text messages, Bert embeddings and visual features,
- Model (C) Factorizing attention module (FAM) inspired by factorization machines [4]

#### References

- Vaswani, et al, Attention Is All You Need (2017)
- Rendle, S., Factorization Machines, (2010)
- Li, J., et Al., A survey on deep learning for named entity recognition, (2018)
- Zhang, et al.: Adaptive co-attention network for named entity recognition in tweets, In , AAAI (2018).

This research uses the Chameleon testbed. www.chameleoncloud.org