Art Innovative Systems for Value Tagging

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INTRODUCTION

Consumers entering the art market are faced with an environment that gives them a vast number of options, but a limited amount of useful knowledge. While data on the current market are widely available, the necessary context to understand this ecosystem is much harder to effectively obtain. How can consumers know what artworks are good purchases without hiring an external consultant or conducting extensive research on their own? How can artists set the ideal price for their work, when this price is driven by numerous outside factors?

Today, artwork evaluations are conducted by human experts. Collectors with high budgets may hire highly priced art consultants and dealers to select artworks for them. For other buyers and sellers some online services exist, and they tend to rely heavily on extensive datasets of past sales. With these services, either the artists themselves or hired experts find comparable works and use these to determine a market price. These comparables are similar works that have already been sold and can be used to provide a basis for pricing. However, using these services can be time-consuming and expensive.

The art market is a unique problem area for modeling prices. Artworks are unique and their prices are driven by aesthetic and emotional considerations, as well as simple financial ones. Artworks seldom follow traditional economic models and need to be considered differently (Beckert, 2013; Velthuis, 2005). An artist seeking information on pricing his/her own artworks is faced with a challenging task. Gallerists sometimes recommend prices based on their own personal market experiences or on their professional contacts. Sometimes, these judgements are highly subjective and are based on emotional considerations about what price the work should be to fit with the narrative that the price is conveying to a buyer (Velthuis, 2005).

The nature of the art market has changed significantly since the 1940s becoming an "unpredictable financial roller coaster" (Shnayerson, 2019). Artists or art galleries have become brands, where buyers use the brands as a guarantee for quality (Pendergast, 2014). That creates a situation which restricts the number of participants on the top level as well as conditions where the phenomenon of promotion plays a crucial role in the artist's success. In the reality of the 21st century art market, there are no longer artists who try to hide themselves from the social aspect of their artistic careers. The numerous artist accounts on Instagram and Facebook are clear examples of this statement. Artists, art galleries, and art dealers provide significant information to the Internet to increase an artist's popularity. Active and established artists have personal websites and Wikipedia pages. If an artist does not have a Wikipedia page with many references, he/she is not considered an established artist. Galleries often create the promotion for

emerging artists. It is almost impossible for an established artist today to not have a considerable amount of information on the Internet. Emerging artists often try to follow the same strategy to provide as much as possible about their art and themselves.

The complexity of the market is exacerbated by the role of "superstars" (McAndrew, 2017). Consumers looking to reduce the amount of work that they must do to find a quality piece of art look for artists with well-known names and established reputations. This concentrates sales in a very small subset of artists and raises their prices accordingly.

An artist may experiment with using the Internet as a resource to help him/her determine a price for his/her artwork. However, while the amount of information available is vast, sifting through that information to find a comparable work is much more of a challenge. This can create problems for artists, who may overprice their work and lose sales, or underprice their work and diminish their market potential. Artists must take care to ensure that their prices are appropriate to the current stage of their career, so that they can fit into their role in the current market (Velthuis, 2005). Being perceived as too concerned with making money on artworks can be a significant hindrance to an artist's career (Velthuis, 2005). In contrast, pricing too low can make an artist's work less appealing from an investment perspective.

Past research on combining fine art with modern computing technology has been limited. Several works have addressed problems such as identifying the style, artist, or artistic period of a work based on its visual characteristics. Other works have used consumer data to identify which artworks a given user will interact with or purchase (He, Fang, Wang, & McAuley, 2016; Messina, Dominguez, Parra, Tratter, & Soto, 2018). However, integrating artworks into the broader context of the art market itself has been largely neglected by researchers.

This article will discuss the problem area of the art market, review a selection of past works that address developing recommender systems for artwork, and propose a design for a recommender system that will provide prices for a given artwork. The system is called ArtIST, which stands for Art Innovative Systems in Value Tagging.

BACKGROUND

The global art market plays a significant role in the international economy. The global art market was valued at 63.7 billion USD in 2017 (Freeman, 2018). Online sales are becoming increasingly significant, with over 29% of today's gallery sales being made online (ArtTactic, 2018). Additionally, galleries are closing at a significant rate; more art galleries closed their doors in 2018 than opened them (Freeman, 2018). In the online market, consumers, especially newer consumers, are uncertain about making large purchases, due to their concerns about price instability (ArtTactic, 2018). The role of artworks as a means of investment must also be considered. Contemporary and Post-War Art were found in 2018 to have gains since 2000 on a par with the S&P 500 (Artprice.com, 2018).

The concept of automatic classification of artworks has received a large amount of attention in recent years. Identifying specific artists or artistic periods by developing features is a notable trend that has been addressed in several works (Falomir, Museros, Sanz, & Gonzalez-Abril, 2018; Gultepe, Edward. Conturo, & Makrehchi, 2018). Other researchers are exploring the idea of tagging based on other types of features, such as retrieving photographs according to their emotional content (Machajdik & Hanbury, 2010). Still, further work has been done on developing systems that allow images to be retrieved based on specific artistic concepts (Yelizaveta, Chua Tat-Seng, & Irina, 2005).

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