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Computational Formalism

Art History and Machine Learning

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Computational Formalism: Art History and Machine Learning

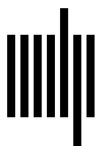
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APPENDIX

CLASSIFICATION BY ARTISTIC STYLE, PUBLICATIONS IN COMPUTER SCIENCE, 2005–2021, INCLUDING THE DEVELOPMENT AND UTILIZATION OF FINE ART DATASETS

Dataset/Article	Subject/Source	Style Classifications
ArtHistorian ¹ (2005) “Content-Based Access to Art Paintings”	Western painting Source: Internet (Web Museum Paris http://www. .ibiblio.org/wm/)	Classicism, Cubism, Expressionism, Impressionism, Surrealism
Zujovic et al. ² (2009) “Classifying Paintings by Artistic Genre: An Analysis of Features & Classifiers”	Western painting Source: Internet (unspecified)	Abstract Expressionism, Cubism, Impressionism, Pop Art, Realism
Siddiquie et al. ³ (2009) “Combining Multiple Kernels for Efficient Image Classification”	Western painting Source: Internet (unspecified)	Abstract Expressionist, Baroque, Cubism, Graffiti, Impressionist, Renaissance
Shamir et al. ⁴ (2010) “Impressionism, Expres- sionism, Surrealism: Automated Recognition of Painters and Schools of Art”	Modern Western painting Source: Internet (unspecified)	Abstract Expressionism, Impression- ism, Surrealism
Ćuljak et al. ⁵ (2011) “Classification of Art Paint- ings by Genre”	Western painting Source: “Google search engine” (i.e., internet)	Cubism, Fauvism, Impressionism, Naïve Art, Pointillism, Realism
Karayev et al. ⁶ (2013) “Recognizing Image Style”	Western painting + Ukiyo-e Source: Wikipaintings	Abstract Art, Abstract Expressionism, Art Informel, Art Nouveau (Modern), Baroque, Color Field Painting, Cubism, Early Renaissance, Expres- sionism, High Renaissance, Impres- sionism, Magic Realism, Mannerism (Late Renaissance), Minimalism, Naïve Art (Primitivism), Neoclassi- cal, Northern Renaissance, Pop Art, Post-Impressionism, Realism, Rococo, Romanticism, Surrealism, Symbolism, Ukiyo-e

(continued)

Dataset/Article	Subject/Source	Style Classifications
Painting-91 ⁷ (2014) “Painting-91: A Large Scale Database for Computational Painting Categorization”	Western painting Source: Internet (unspecified)	Abstract Expressionism, Baroque, Constructivism, Cubism, Impressionism, Neo-Classical, Pop Art, Postimpressionism, Realism, Renaissance, Romanticism, Surrealism, Symbolism
Saleh and Elgammal ⁸ (2015, 2016) “Large-Scale Classification of Fine-Art Paintings: Learning the Right Metric on the Right Feature”	Western painting + Ukiyo-e Source: WikiArt	27 style categories: Abstract Expressionism, Action Painting, Analytical Cubism, Art Nouveau–Modern Art, Baroque, Color Field Painting, Contemporary Realism, Cubism, Early Renaissance, Expressionism, Fauvism, High Renaissance, Impressionism, Mannerism–Late-Renaissance, Minimalism, New Realism, Northern Renaissance, Pointillism, Pop Art, Post Impressionism, Primitivism–Naive Art, Realism, Rococo, Romanticism, Symbolism, Synthetic Cubism, Ukiyo-e
Bar et al. ⁹ (2015) “Classification of Artistic Styles Using Binarized Features Derived from a Deep Neural Network”	Western painting + Ukiyo-e Source: WikiArt	(Same as above—27 WikiArt style categories)
Tan et al. ¹⁰ (2016) “Ceci n’est pas une pipe: A Deep Convolutional Network for Fine-Art Paintings Classification”	Western painting + Ukiyo-e Source: WikiArt	(Same as above—27 WikiArt style categories)
DeepArt ¹¹ (2017) “DeepArt: Learning Joint Representations of Visual Arts”	“Everything” (primarily Western art) Sources: over 500,000 works from WikiArt, Web Gallery of Art, Rijksmuseum, Google Arts & Culture, images collected via Google (internet)	—
Elgammal et al. ¹² (2018) “The Shape of Art History in the Eyes of the Machine”	Western painting + Ukiyo-e Source: WikiArt	20 (amended categories): Abstract-Expressionism, Art Nouveau, Baroque, Color field painting, Cubism, Early Renaissance, Expressionism, Fauvism, High Renaissance, Impressionism, Mannerism and Late Renaissance, Minimalism, Naïve art–Primitivism, Northern Renaissance, Pop-art, Post-Impressionism, Realism, Rococo, Romanticism, Ukiyo-e

Dataset/Article	Subject/Source	Style Classifications
SemArt ¹³ (2018) “How to Read Paintings: Semantic Art Understanding with Multi-Modal Retrieval”	Creation of SemArt: A collection of art images with textual attributes	—
OmniArt ¹⁴ (2018) “OmniArt: A Large-Scale Artistic Benchmark”	“Everything” (primarily Western art) Sources: over 2 million works from WikiArt, 16 museum collections (updating/scraping new content from these databases)	—
Gultepe et al. ¹⁵ (2018) “Predicting and Grouping Digitized Paintings by Style Using Unsupervised Feature Learning”	Western painting Source: abcartgallery (now “Olga’s Gallery” https://www.freeart.com/gallery/)	Art Nouveau, Baroque, Expressionism, Impressionism, Post-Impressionism, Realism, Renaissance, Romanticism
Cetinic et al. ¹⁶ (2019) “A Deep Learning Perspective on Beauty, Sentiment, and Remembrance of Art”	Western painting + Ukiyo-e Source: Wikiart	Abstract Art, Abstract Expressionism, Academicism, Art Informel, Art Nouveau, Baroque, Color Field Painting, Cubism, Expressionism, Impressionism, Lyrical Abstraction, Magic Realism, Mannerism, Minimalism, Naïve art, Neoclassicism, Pop Art, Post-Impressionism, Realism, Renaissance, Rococo, Romanticism, Surrealism, Symbolism, Ukiyo-e
Sandoval et al. ¹⁷ (2019) “Two-Stage Deep Learning Approach to the Classification of Fine-Art Paintings”	Western painting + Ukiyo-e, + Australian Aboriginal Source: Wikiart (Wikiart-derived subset Pandora18K ¹⁸), author-created Aboriginal category	<i>Dataset 1:</i> Australian Aboriginal Art, Expressionism, Impressionism, Post Impressionism, Realism, Romanticism <i>Dataset 2:</i> Abstract Expressionism, Art Nouveau (Modern), Australian Aboriginal Art, Baroque, Color Field Painting, Cubism, Early Renaissance, Expressionism, Fauvism, High Renaissance, Impressionism, Mannerism (Late Renaissance), Minimalism, Naïve Art (Primitivism), Northern Renaissance, Pop Art, Post Impressionism, Realism, Rococo, Romanticism, Symbolism, Ukiyo-e

(continued)

Dataset/Article	Subject/Source	Style Classifications
		<i>Dataset 3:</i> Abstract Art, Australian Aboriginal Art, Baroque, Byzantine Iconography, Cubism, Early Renaissance, Expressionism, Fauvism, High Renaissance, Impressionism, Naïve Art, Northern Renaissance, Pop Art, Post Impressionism, Realism, Rococo, Romanticism, Surrealism, Symbolism
Chen and Yang ¹⁹ (2019) “Recognizing the Style of Visual Arts via Adaptive Cross-Layer Correlation”	Painting-91 (see above)	Painting-91 styles (see above)
Gao et al. ²⁰ (2020) “The Performance of Two CNN Methods in Artworks Aesthetic Feature Recognition”	Western art: 5 artists Source: “Best Artworks of All Time: Collection of Paintings of the 50 Most Influential Artists of All Time” (https://www.kaggle.com/ikarus777/best-art-works-of-all-time)	—
Zhong et al. ²¹ (2020) “Fine-Art Painting Classification via Two-Channel Dual Path Networks”	Western art + Ukiyo-e Source: WikiArt, Gallerix	Abstract Art, Abstract Expressionism, Art Informel, Art Nouveau (Modern), Baroque, Color Field painting, Conceptual Art, Cubism, Early Renaissance, Expressionism, High Renaissance, Impressionism, Mannerism (Late Renaissance), Minimalism, Naïve art (Primitivism), Neoclassical, Northern Renaissance, Pop Art, Post-Impressionism, Realism, Romanticism, Rococo, Surrealism, Symbolism, Ukiyo-e
Vaigh et al. (2021) ²² “GCNBoost: Artwork Classification by Label Propagation through a Knowledge Graph”	SemArt dataset ²³ and Buddha statue ²⁴ dataset	SemArt: “School” meaning nationality, “genre” including portrait, landscape, etc. Buddha statues style periods: China, Heian period, Kamakura period, and Nara period
Castellano et al. ²⁵ (2021) “Integrating Contextual Knowledge to Visual Features for Fine Art Classification”	ArtGraph: an artistic knowledge graph based on WikiArt and DBpedia	—

Dataset/Article	Subject/Source	Style Classifications
Castellano and Vessio ²⁶ (2021) “Deep Learning Approaches to Pattern Extraction and Recognition in Paintings and Drawings: An Overview”	This is a survey of deep learning and art analysis	—
Zhao et al. ²⁷ (2021) “How to Represent Paintings: A Painting Classification Using Artistic Comments”	Western art Sources: Painting-91; WikiArt	See WikiArt style categories above
Zhao et al. ²⁸ (2021) “Compare the Performance of the Models in Art Classification”	MultitaskPainting100K dataset (created by the authors)	—

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