

VIRTUAL GETTY TOUR GUIDE

A dialogue system offering information about the paintings at the Getty Center

Group Number 59

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BACKGROUND

- ▶ Art museums often have audio guides or timed tours that offer partial/not so comprehensive information about all painting exhibits currently on display.
- ▶ A Visitor is unable to customize these tours for getting information on the paintings of his/her interest.
- ▶ Other than providing the Artist Name, Painting Creation Date and a very brief description of the work, these audio guides/tours/description boards fail to capture the complete context of a painting.
- ▶ The Getty Center known for being one of the best art museums in Los Angeles, has no availability of an audio guide and hosts only one Collection Highlights tour that focuses on a few masterpieces alongside other non-painting exhibits.

PROJECT GOAL

- ▶ In order to give the visitor control over information regarding paintings of his/her interests, we have created a dialogue system using Opendial that can provide a painting's name, history and period given a visitor's choice of culture, artist, size and kind.
- ▶ This gives the visitor full flexibility on the search and ensures better interactivity.

METHODOLOGY: INFORMATION EXTRACTION

- ▶ Scraped 321 painting webpages of paintings currently on view at the Getty Center from the Getty Museum Collection Archives <http://www.getty.edu/art/collection/> using BeautifulSoup.
- ▶ BeautifulSoup is a html parser Python library that helps create wrappers based on the fields you wish to extract from the web.
- ▶ Extracted fields were Title, Artist/Maker, Culture, Medium, Dimensions, Description and Date.
- ▶ Performed Named Entity Recognition on the Culture to obtain Country names and on the Description to obtain relevant keywords using TextRazor API.
- ▶ TextRazor's Python SDK is a text processing tool that identifies entities from text and categorizes/classifies them into various topics based on data from Dbpedia and Freebase.
- ▶ Created a materialized database for all the above extractions.

PAINTING WEBPAGE

Object Details

Title:	Wheatstacks, Snow Effect, Morning (Meules, Effet de Neige, Le Matin)
Artist/Maker:	Claude Monet (French, 1840 - 1926)
Culture:	French
Place:	France (Place created)
Date:	1891
Medium:	Oil on canvas
Dimensions:	64.8 × 99.7 cm (25 1/2 × 39 1/4 in.)

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In the fall of 1890, Impressionist Claude Monet arranged to have the wheatstacks near his home left out over the winter. By the following summer he had painted them at least thirty times, at different times throughout the seasons. *Wheatstacks* was Monet's first series and the first in which he concentrated on a single subject, differentiating pictures only by color, touch, composition, and lighting and weather conditions. He said, "For me a landscape hardly exists at all as a landscape, because its appearance is constantly changing; but it lives by virtue of its surroundings, the air and the light which vary continually."

After beginning outdoors, Monet reworked each painting in his studio to create the color harmonies that unify each canvas. The pinks in the sky echo the snow's reflections, and the blues of the wheatstacks' shadows are found in the wintry light shining on the stacks, in the houses' roofs, and in the snowy earth. With raised, broken brushstrokes, Monet captured nuances of light and created a solid, geometric structure that prevents the surface from simply melting into blobs. The wheatstacks are solid forms, and, while the outlying houses are indecipherable close-up, they are clear from a distance.

METHODOLOGY: NATURAL LANGUAGE UNDERSTANDING

- ▶ Used Opendial's framework for creating the NLU model in XML
- ▶ Recognized dialogue acts from raw user utterance
- ▶ Created slot filling type model that captures the dialogue states' context as required and updates the slot variables (requirements for our application : culture, artist, size and medium)

METHODOLOGY: DIALOGUE MANAGEMENT AND NATURAL LANGUAGE GENERATION

- ▶ Developed action selection and transition models for dialogue management in XML.
- ▶ Defined what action the system should perform based on current dialogue state.
- ▶ Defined what transitions in dialogue states should occur based on current action.
- ▶ Developed NLG model for generating system responses for change in dialogue state or new action selection in XML.
- ▶ Connected all the models to the materialized database as an external module to retrieve appropriate results

SYSTEM EVALUATION

- ▶ 12 User Trials
- ▶ 4 different tasks
- ▶ Example task: Find all large French paintings by Monet made on canvas
- ▶ 10 survey questions
- ▶ Evaluation score will be based on average scores retrieved from survey questions for each user
- ▶ Example survey question: I thought the system responded appropriately (score out of 5: 5 for totally agree to 1 for totally disagree)

SYSTEM INTERACTION: USER INPUT

[system] Welcome to the Virtual Getty Tour! Feel free to have a look around. To start, why don't you list a culture you're interested in

[user] Do you have any French paintings?

[system] All right, then let's look at French paintings.

[system] Hmm... There seem to be a lot of paintings meeting your criteria so perhaps you'd like to narrow down your options by size?

[user] Yeah, do you have anything medium sized?

[system] Medium paintings? Sounds good.

[system] Hmm... There seem to be a lot of paintings meeting your criteria so perhaps you'd be interested in a particular medium?

[user] How about oil on canvas?

[system] So you're looking for works painted with oil on canvas. Is that correct?

[user] yes

[system] Okay, we'll look for paintings like that.

[system] All right, here are some artists that fit your criteria: Attributed to Alexandre-Jean Noël; Charles Le Brun; Claude Monet; Edgar Degas; François-Xavier Fabre; Jacques Joseph Tissot; Jacques Willbaut; Jacques-Louis David; Jean-Baptiste Le Prince; Jean-Baptiste Pillement; Jean-Baptiste Raguenet; Jean-Baptiste-Camille Corot; Jean-François de Troy; Jean-François Millet; Jean-Siméon Chardin; Louis-Léopold Boilly; Paul Cézanne; Philippe de Champaigne; Pierre-Auguste Renoir; William-Adolphe Bouguereau; Édouard Manet

[user] Okay, let's check out Monet

[system] I'm sorry, but you weren't very clear there. Were you asking about Claude Monet?

[user] yes

[system] Okay, we'll get you paintings by Claude Monet

[system] Cool, we got paintings: The Portal of Rouen Cathedral in Morning Light; Wheatstacks, Snow Effect, Morning (Meules, Effet de Neige, Le Matin)

[user] Can you tell me about the rouen cathedral?

[system] All right, what would you like to know about The Portal of Rouen Cathedral in Morning Light?

SYSTEM INTERACTION: PAINTING OUTPUT

[system] All right, what would you like to know about The Portal of Rouen Cathedral in Morning Light?

[user] When was it painted?

[system] This work is dated to 1894

[user] What is the size of this painting?

[system] The dimensions of this work are 100.3 × 65.1 cm (39 1/2 × 25 5/8 in.)

[user] Can you tell me the story associated with this painting?

[system] "Everything changes, even stone." Claude Monet wrote these words in a letter and vividly demonstrated them in paint, conveying a wondrous combination of permanence and mutability as the sun daily transformed the facade of Rouen Cathedral. Extending the building's encrusted stone surface to the richly varied impasto surface of his painting, he portrayed the cathedral perpetually re-emerging in the suffused light of early morning. Monet created several groups of paintings exploring the color, light, and form of a single subject at various times of day, but his Rouen Cathedral series was his most intense effort on a single site. He painted there in late winter in both 1892 and 1893, then reworked his thirty canvases from memory in the studio through 1894. He began this example in 1893, working in an improvised studio in the front room of a dressmaker's shop across from the cathedral. After creating a coherent ensemble, Monet selected twenty paintings that he considered "complete" and "perfect," including this one, for an exhibition at his Paris dealer's gallery in May 1895. Pissarro and Cézanne visited and praised the series, and patrons quickly purchased eight paintings from the group.

WORK IN PROGRESS

- ▶ Calculation of evaluation scores
- ▶ Github repository final commit

TOOLS/REFERENCES

- ▶ Beautiful Soup: <https://www.crummy.com/software/BeautifulSoup/>
- ▶ Opendial: <http://www.opendial-toolkit.net/>
- ▶ TextRazor: <https://www.textrazor.com/docs/python>

QUESTIONS ?

THANK YOU