

Neo4j

We utilized Neo4j to analyze complex relationships between artists, movements, and artistic styles, leveraging the power of graph databases to uncover hidden patterns in the relationships that would be difficult to detect in a traditional relational database like PostgreSQL. By modeling the art world as an interconnected network, we were able to explore how artistic influence spreads across generations, how art schools shape collaboration patterns, and how certain artists act as bridges between different styles and movements.

One of our primary investigations focused on identifying the most influential artists in terms of mentorship, collaboration, and cross-movement connections. Using graph traversal queries, we analyzed how influence propagates over multiple levels—whether an artist directly influenced another or if their impact traveled through multiple intermediaries. This was extremely insightful because this is something that is not able to be done solely using PostgreSQL, and it highlighted how deep a graph network can go. We identified key figures who served as inspiration in their respective artistic network, facilitating the transmission of ideas and styles across different eras.

	artist	influence_count
1	"Paul Cezanne"	38
2	"Caravaggio"	32
3	"Pablo Picasso"	32
4	"Nicolas Poussin"	25
5	"Gustave Courbet"	24
6	"Titian"	24

Next, we examined art schools as potential sources of collaboration, determining whether artists who studied at the same institutions were more likely to collaborate in their careers. Our query revealed that artists who attended the same school tended to form tight-knit clusters, with certain institutions, such as the École des Beaux-Arts and the Bauhaus, which produced particularly dense collaboration networks. We also explored whether these school-based artistic connections extended beyond direct contemporaries by analyzing multi-hop relationships between alumni across different generations.

In addition, we explored how different artistic styles interconnect by identifying artists who served as bridges between multiple styles. Unlike SQL, which relies on joins across multiple tables, Neo4j allowed us to traverse these relationships dynamically, revealing that some artists—such as Pablo Picasso and Kazimir Malevich—were instrumental in linking historically distinct styles. These artists not only worked in multiple artistic styles but also influenced artists beyond their direct stylistic affiliations, creating a web of artistic evolution.

	artist	a.birth_year	style_count
1	"Alfred Freddy Krupa"	1971	37
2	"Cricorps"	1889	21
3	"Kazimir Malevich"	1879	20
4	"Salvador Dali"	1904	18
5	"Pablo Picasso"	1881	16
6	"Henri Matisse"	1869	15

We developed a Neo4j query to analyze student counts and identify the most prolific teachers in art history. By leveraging graph traversal, this query follows mentorship chains up to three levels deep, revealing which artists mentored the highest number of students. The results highlight key figures who played a crucial role in shaping future generations of artists, either through direct mentorship or extended influence. This analysis provides insights into which artists had the greatest educational impact, helping us understand the transmission of artistic techniques, philosophies, and innovations across time. Notably, artists with a high student count often contributed to the establishment of major art movements or schools of thought, reinforcing the importance of mentorship in the evolution of art.

	teacher.name	total_students
1	"Charles Gleyre"	41
2	"Richard Parkes Bonington"	30
3	"Jean-Leon Gerome"	23
4	"Ilya Repin"	20
5	"Ivan Kramskoy"	20

In conclusion, Neo4j allowed us to explore the deep interconnectedness of the art world, leveraging graph analytics to uncover relationships and trends that would be challenging to detect with SQL-based queries. The final outputs from these analyses, as well as the Cypher queries used, are available in our GitHub repository for further exploration.