SIX DEGREES OF KEVIN BACON

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PitchBook

PROJECT SPONSOR

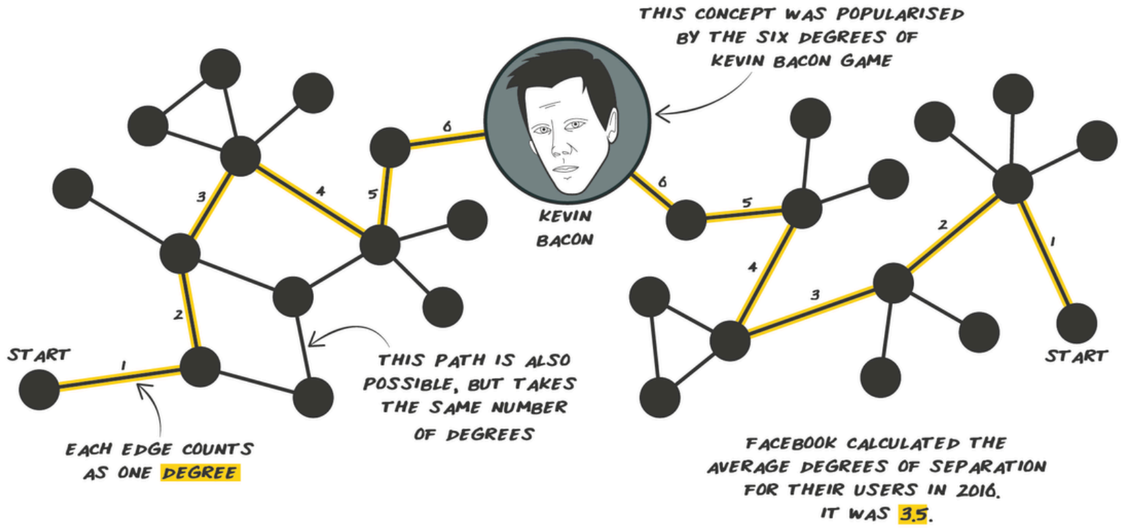
Pitchbook is a financial data and software company that provides comprehensive information on private and public equity markets. Their platform offers detailed data on companies, deals, funds, and professionals within the investment landscape. Pitchbook's services are widely used by venture capitalists, private equity firms, investment banks, and other entities operating in the financial sector.

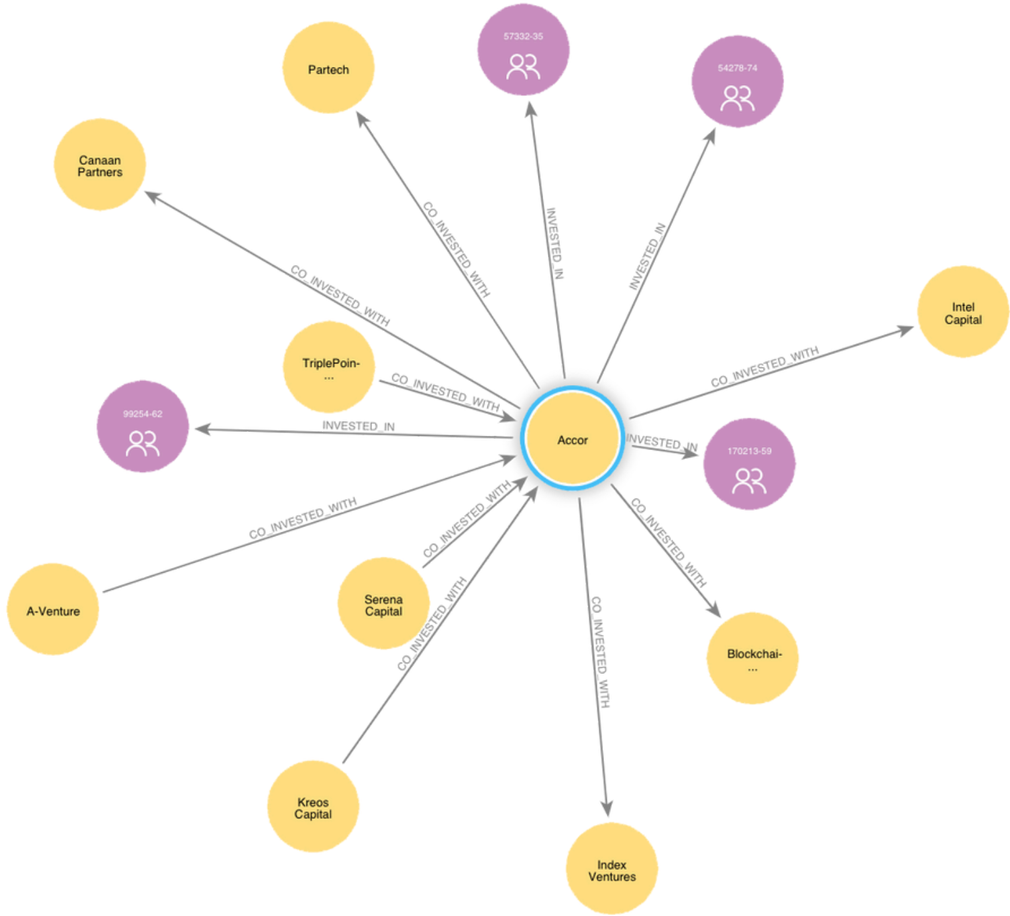
PROJECT OVERVIEW

What is “6 Degrees of Kevin Bacon”??

A game where you try to connect any actor to Kevin Bacon through six or fewer connections. Two actors are connected if they have appeared in a movie or commercial together.

Extending 6 degrees of connections to PitchBook





PROBLEM STATEMENT

How can Pitchbook offer an intuitive way to explore the VC network

58%

of VC deals come from referrals through their network

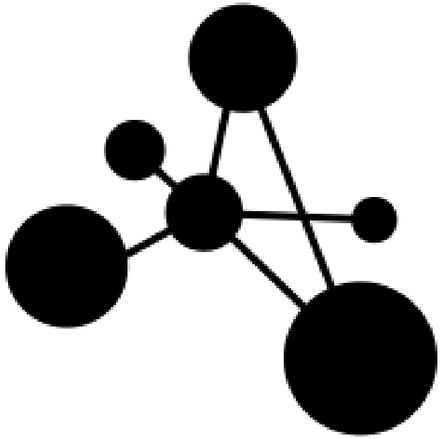
Source: Harvard Business Review

- No way to get referral / introductions
- No way to identify VC’s clusters & co-investment pattern
- No visual or easy to consume insights

PROJECT GOAL

Visualize VC Relationships for Investment Insights

We aim to empower PitchBook customers to identify prospective investment opportunities and gain network insights by visualizing VC’s network graph.



PROJECT OBJECTIVES

The network analysis and graphs will opens a door for PitchBook customers through:

- Providing an interactive tool highlighting VC relationships & investment information
- Identifying commonalities and overlap between VCs indicating a connection
- Finding the shortest way to reach potential investors

OUR APPROACH

Python + Neo4j Enabled Implementation

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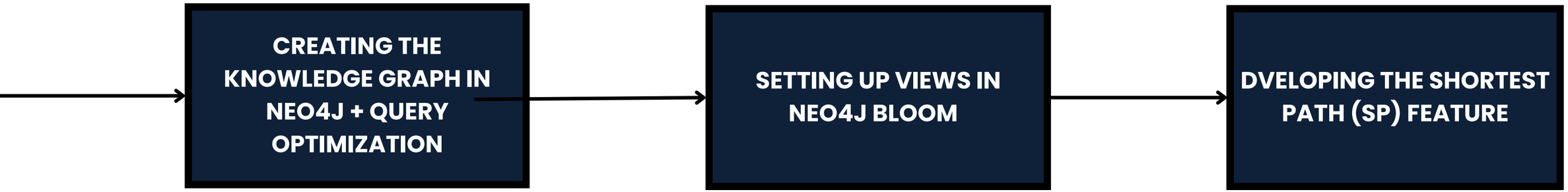
Python + Neo4j Enabled Implementation



OUR APPROACH

Python + Neo4j Enabled Implementation

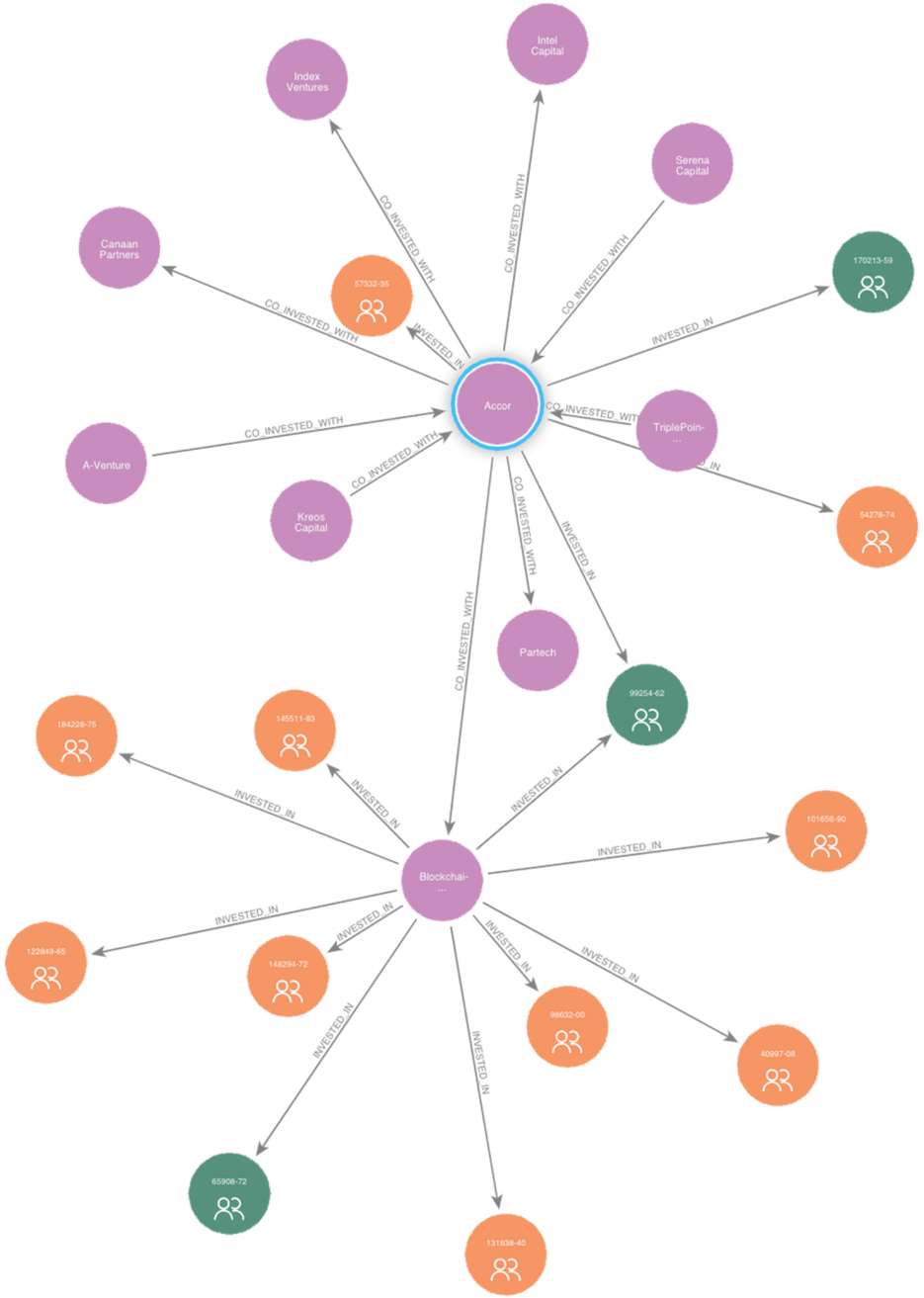
- **Requirement Gathering Phase**: Collaborated with PMs and SMEs at PitchBook to understand existing platform capabilities and users' pain points to develop an MVP for the solution
- **Evaluating Tech Stack and Database Structure**: Surveyed different technologies as well database structure for the development of the MVP. Decided on using knowledge graphs. Started development using the NetworkX in Python. Pivoted to Neo4j for better flexibility and visual experience
- **Data Pre-Processing in Python**: Processed the raw data file to standardize the industry verticals column
- **Creating the Knowledge Graph in Neo4j + Query Optimization**: Wrote a Cypher to read data into a knowledge database efficiently with the following entities - VC and companies, and relationships - "invested in" and "co-invested in". Iterated on the query to reduce the run time by 60%
- **Setting Up Views in Neo4j Bloom**: Visualized the knowledge graph in Neo4j Bloom. Added AUM and industry vertical filters to enable users to better explore the network
- **Developing the Shortest Path Feature**: Developed a shortest path feature to enable users to find the shortest path to an investor or investment

BENEFITS

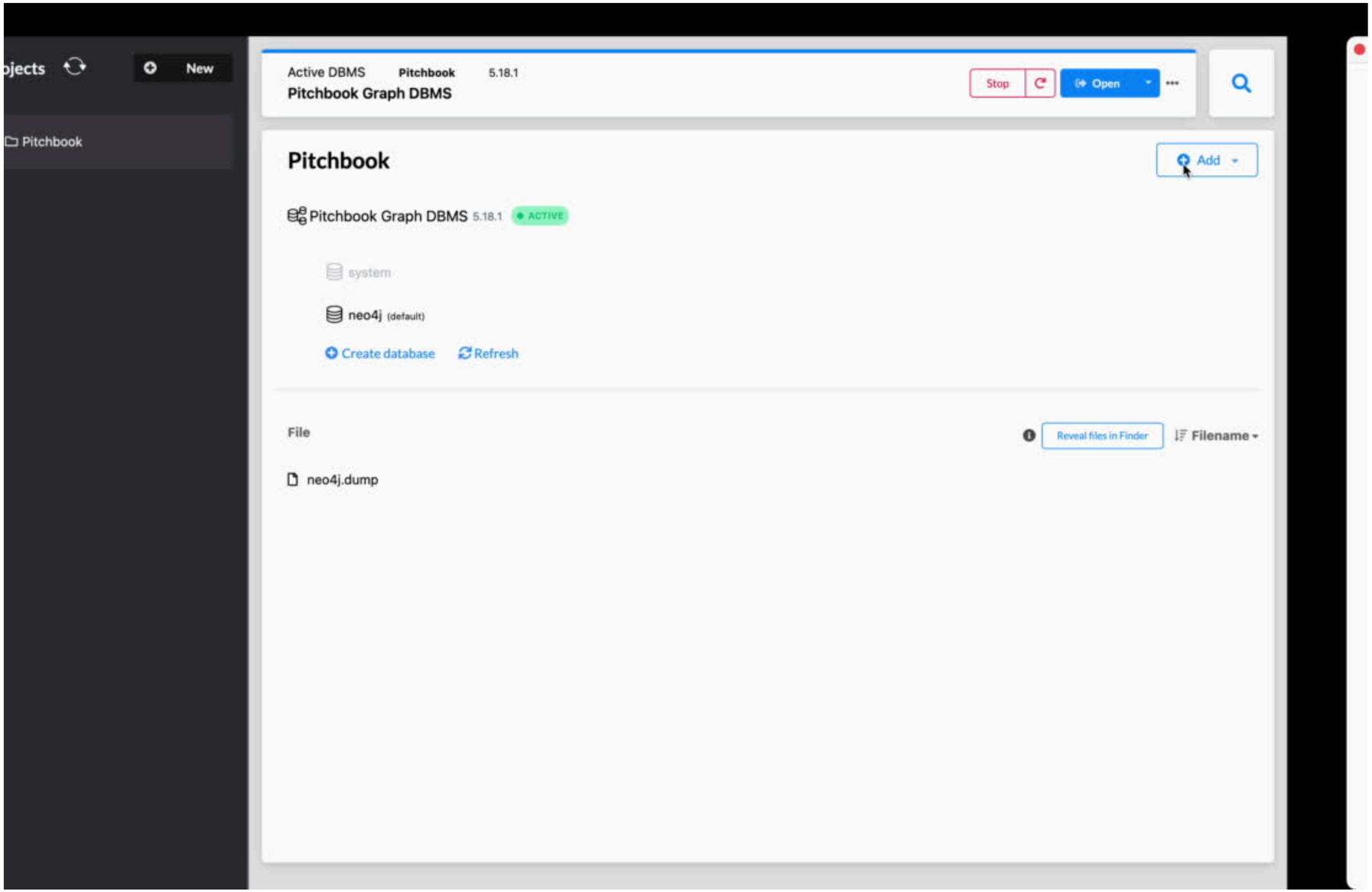
Providing Value to all Pitchbook Customers

VCs are interested in knowing about other VCs, their interests & investment patterns

- Co-investment pattern analysis
- Prospective investment opportunities
- Competitive benchmarking of similar VC



Demo

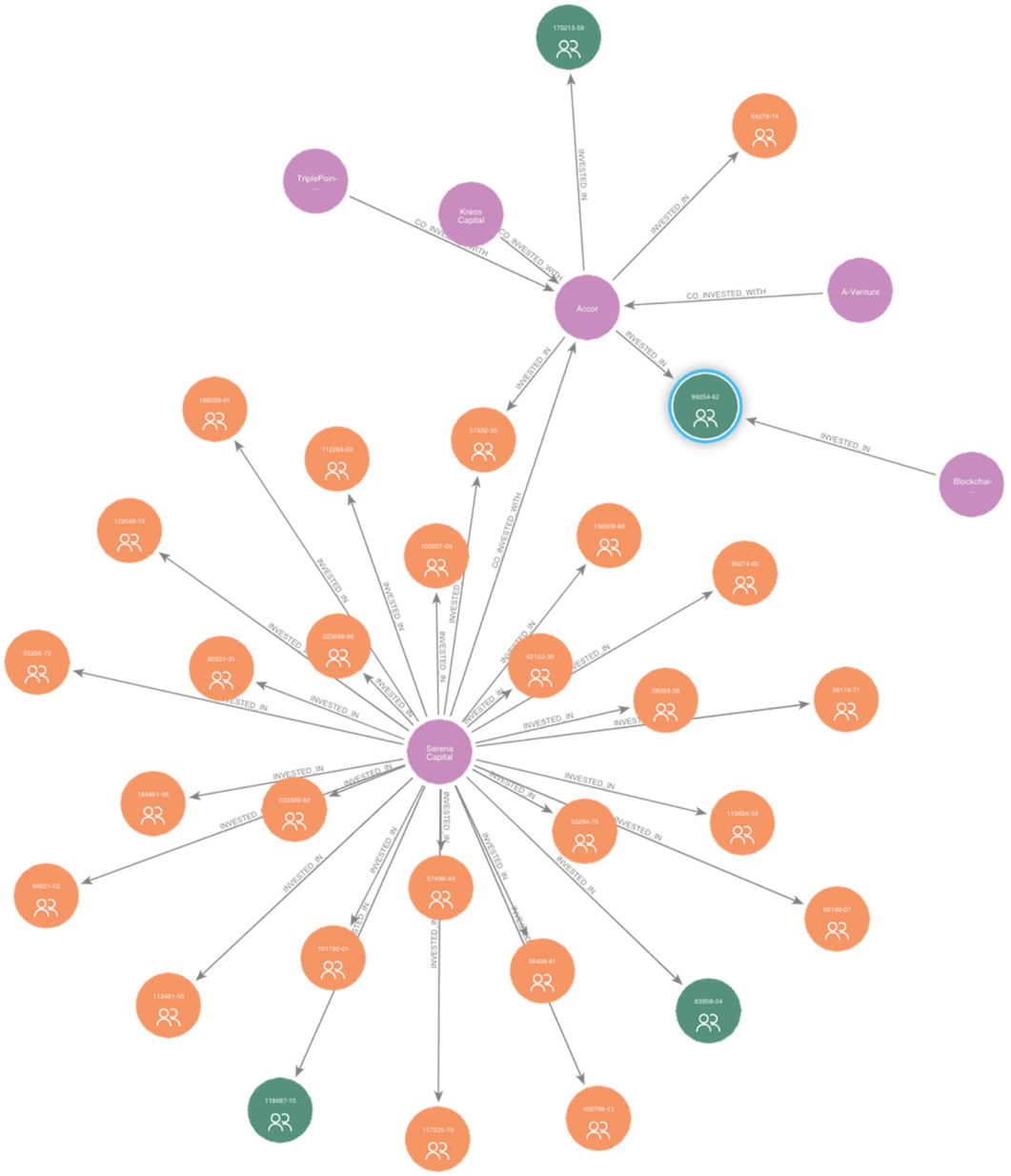

New
Pitchbook
Active DBMS Pitchbook 5.18.1
Pitchbook Graph DBMS
Stop
Open
Pitchbook
Add
Pitchbook Graph DBMS 5.18.1
ACTIVE
system
neo4j (default)
Create database
Refresh
File
Reveal files in Finder
Filename
neo4j.dump

BENEFITS

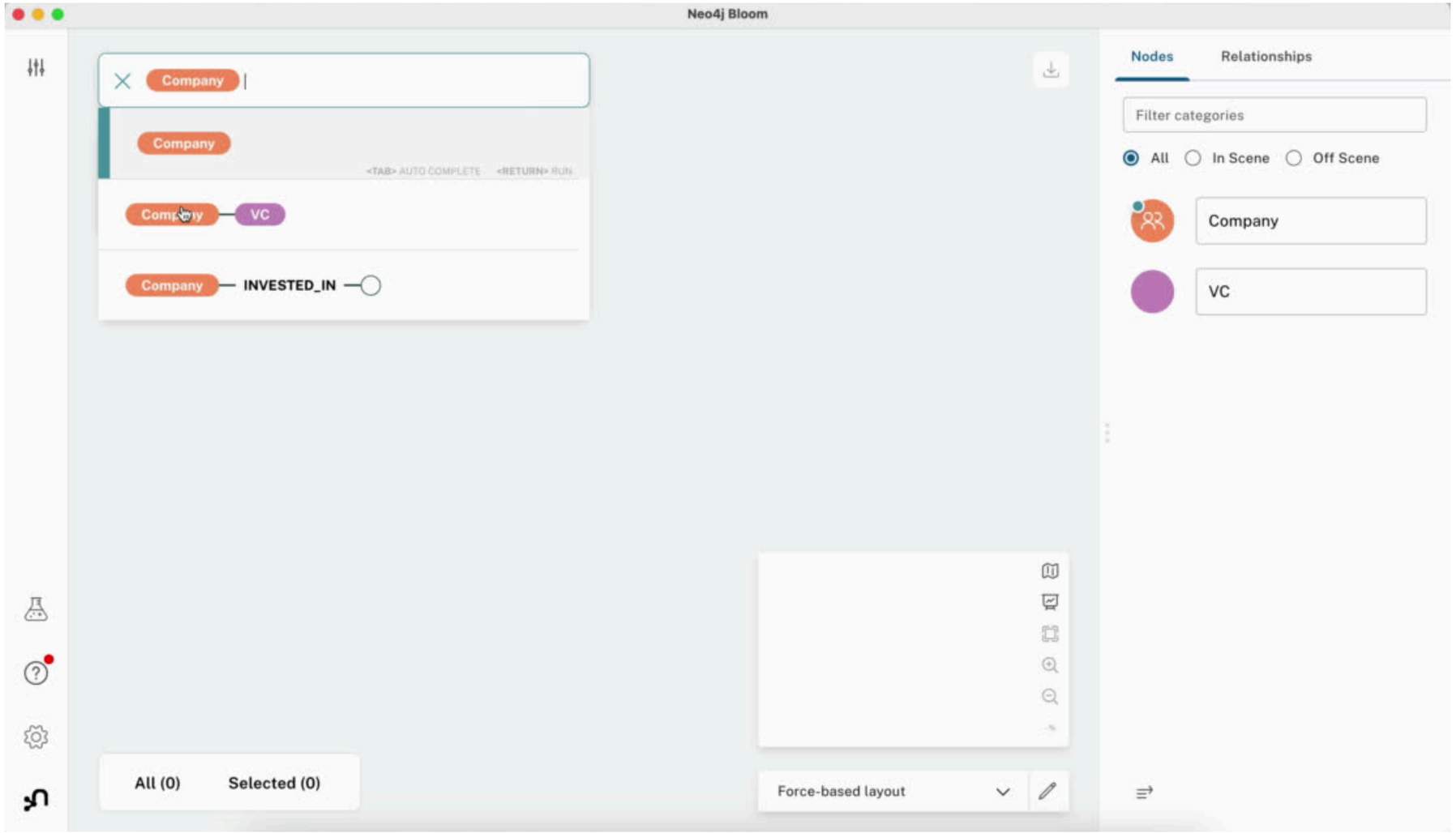
Providing Value to all Pitchbook Customers

Founders not just want to know but want to reach out to investors who might be interested in them.

- Targeted investor outreach
- VC network exploration
- Nth degree network connection

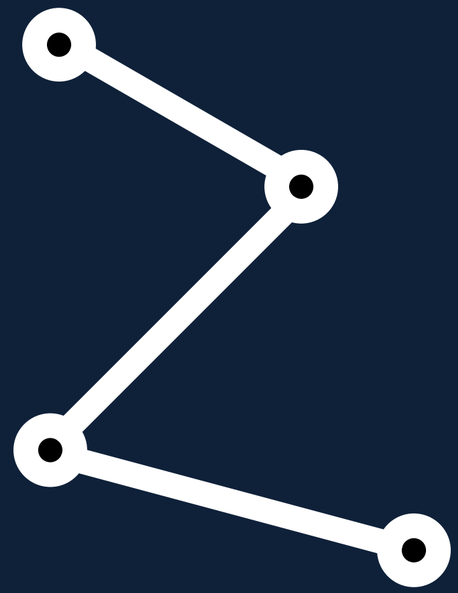


Demo


Neo4j Bloom
Company
Company
<TAB> AUTO COMPLETE
<RETURN> RUN
Company
VC
Company
INVESTED_IN
Nodes
Relationships
Filter categories
All
In Scene
Off Scene
Company
VC
All (0)
Selected (0)
Force-based layout

Implementation of Shortest Path Between Two Nodes

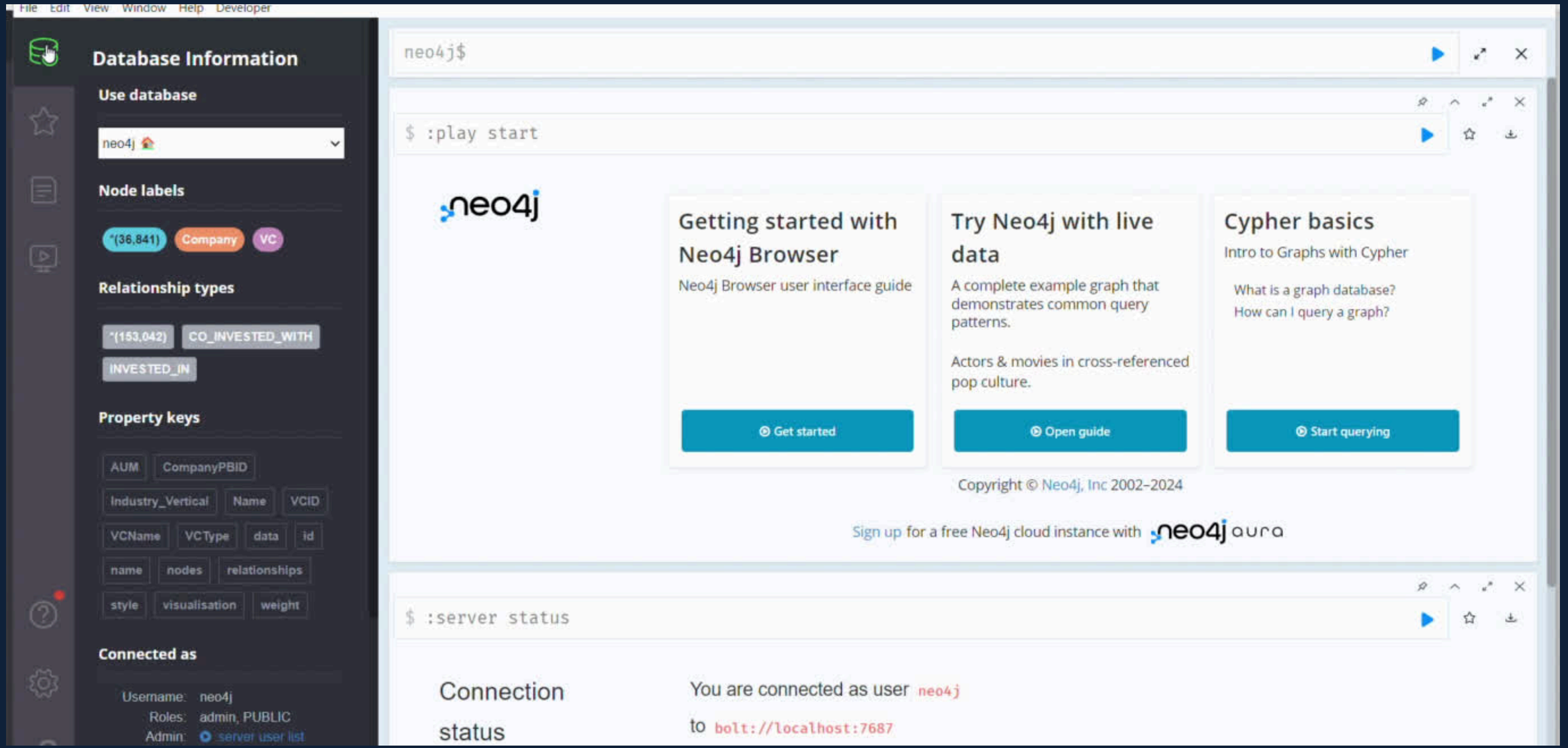
This feature in our MVP aims to find the shortest distance between any 2 nodes in our network graph. This is done using Dijkstra’s Graph Data Science library algorithm under Neo4j.



- Tap into the VC-Company network to find VCs investing in similar companies. Leverage existing connections for introductions and referrals
- Approach VCs through other VCs in the fastest way possible to utilize mutual connections to facilitate introductions and validate your company's potential

PitchBook

Demo


File Edit View Window Help Developer
Database Information
Use database
neo4j
Node labels
*(36,841)
Company
VC
Relationship types
*(153,042)
CO_INVESTED_WITH
INVESTED_IN
Property keys
AUM
CompanyPBID
Industry_Vertical
Name
VCID
VCName
VCType
data
id
name
nodes
relationships
style
visualisation
weight
Connected as
Username: neo4j
Roles: admin, PUBLIC
Admin: server user list
neo4j$
$:play start
neo4j
Getting started with Neo4j Browser
Neo4j Browser user interface guide
Get started
Try Neo4j with live data
A complete example graph that demonstrates common query patterns.
Actors & movies in cross-referenced pop culture.
Open guide
Cypher basics
Intro to Graphs with Cypher
What is a graph database?
How can I query a graph?
Start querying
Copyright © Neo4j, Inc 2002–2024
Sign up for a free Neo4j cloud instance with neo4j aura
$:server status
Connection status
You are connected as user neo4j
to bolt://localhost:7687

THANK YOU

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