

# Mapping Scientific Collaboration Networks

Teresa Codoñer Esparza, Laura Jiménez Navarro, Eva Martín Iglesias, Pilar Mas Sarrión

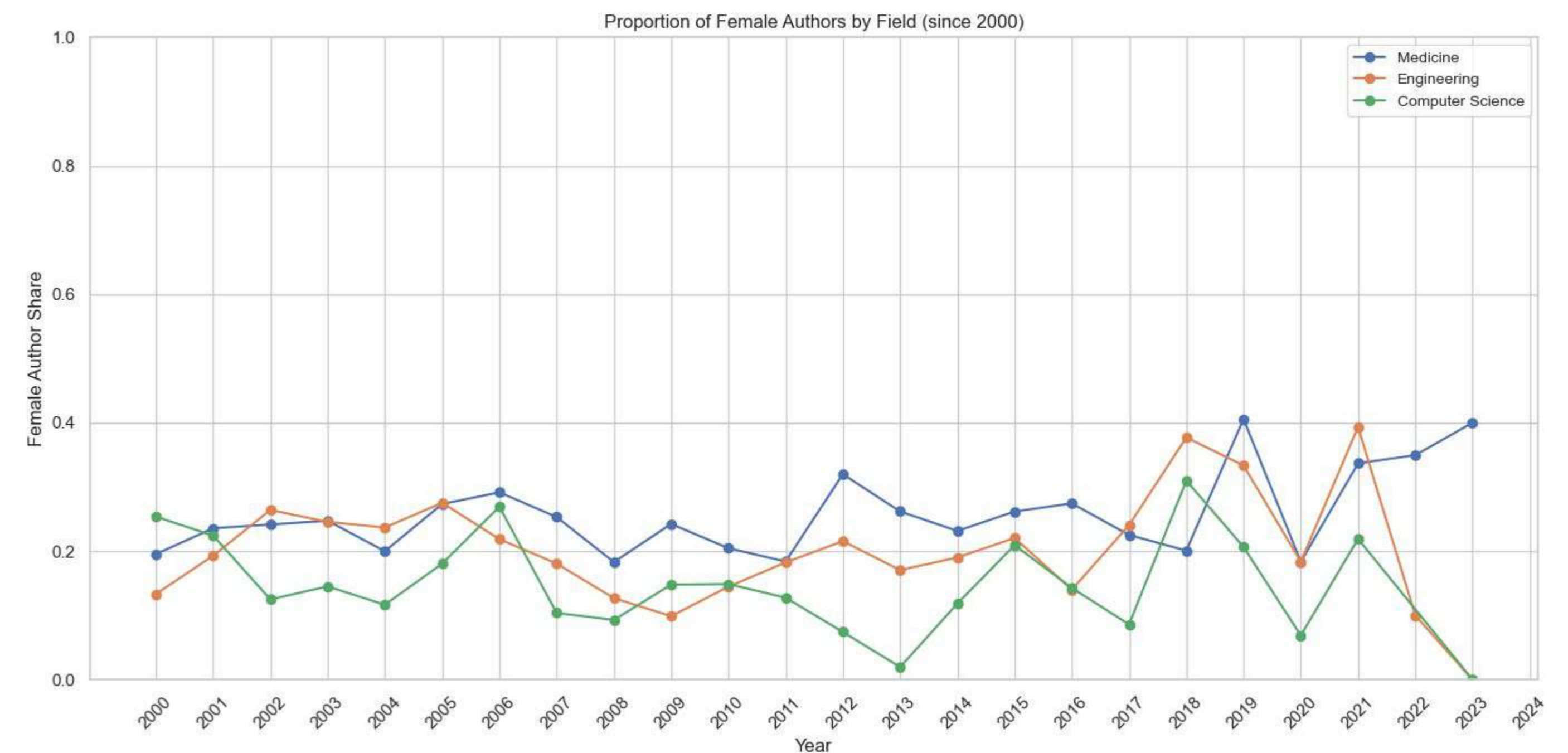


## Introduction

Scientific research increasingly depends on collaboration between researchers, institutions, and countries.

By building a scientific collaboration network, it is possible to better understand how knowledge spreads and how these patterns can inspire innovative educational strategies.

This project uses data from OpenAlex to build a real-world co-authorship network.



Proportion of female authors by field

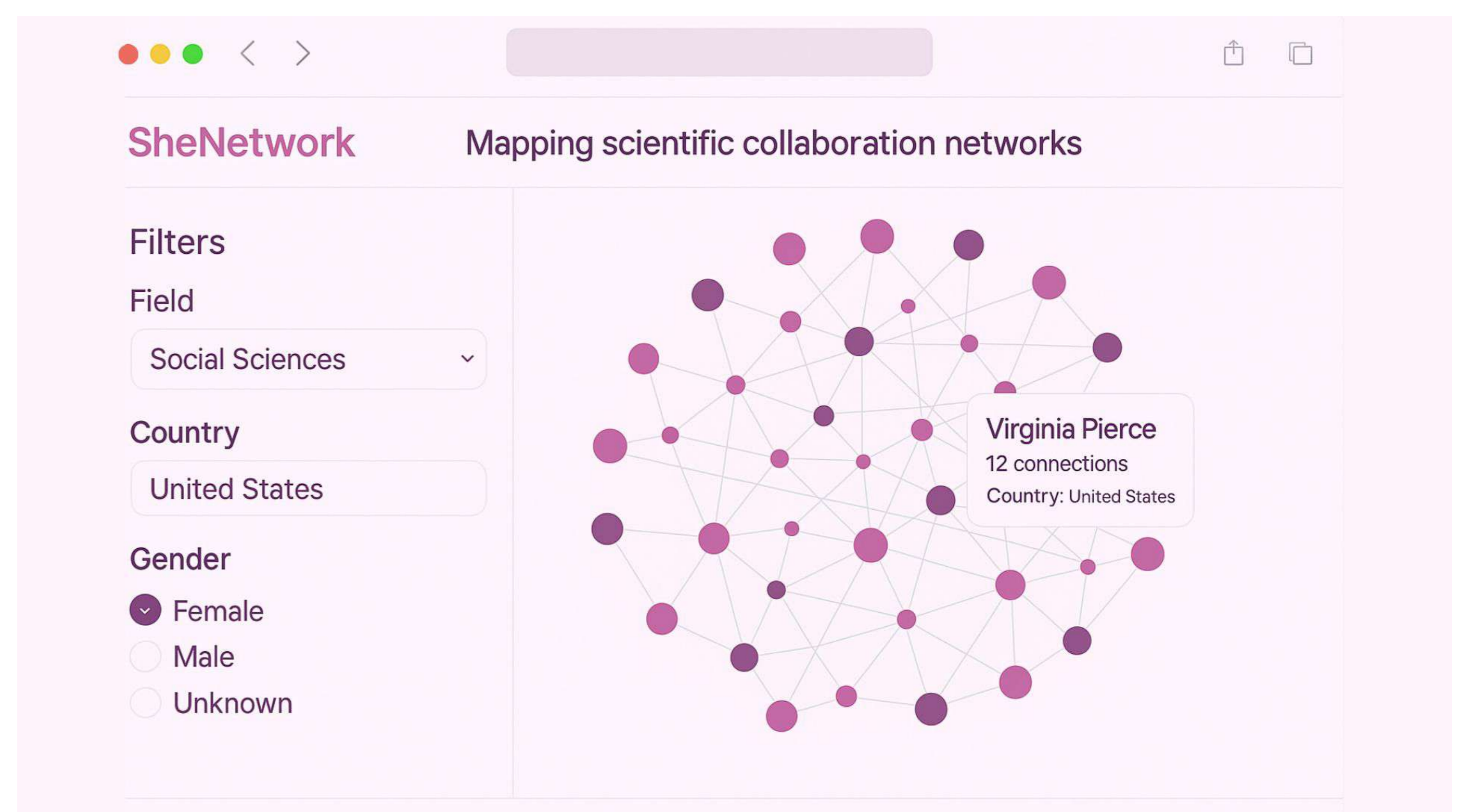
## Data and Methods

Data was collected from OpenAlex, focusing on articles published between 2018 and 2023.

Fields selected: Social Sciences, Computer Science, Multidisciplinary Science.

A network was built where each node represents an author and each edge represents a co-authorship.

Attributes such as country and gender were recorded to allow further exploration.



Web prototype

## Network Analysis

Centrality measures (degree, betweenness, eigenvector) were calculated to detect key researchers.

Groups of closely collaborating authors were identified through community detection.

The network was composed of multiple small components, with no giant component.

Certain influential researchers acted as connectors between different groups.

## Prototype-Future Work

A web-based prototype was created to explore the collaboration network dynamically.

Users can filter by field of study, country, and gender.

Future work will include expanding the dataset, refreshing the network in real time, and analyzing the evolution of key researchers over time.

The long-term goal is to support the design of smarter, data-driven educational strategies.

## References

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