# Co-Author Networks in Transportation Research: Findings from TRID Data

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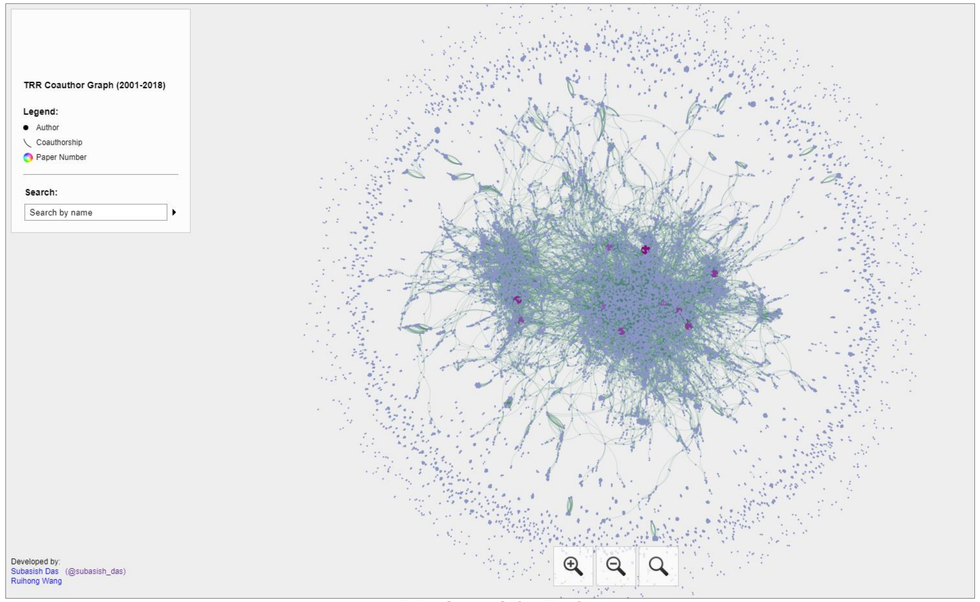
## Abstract

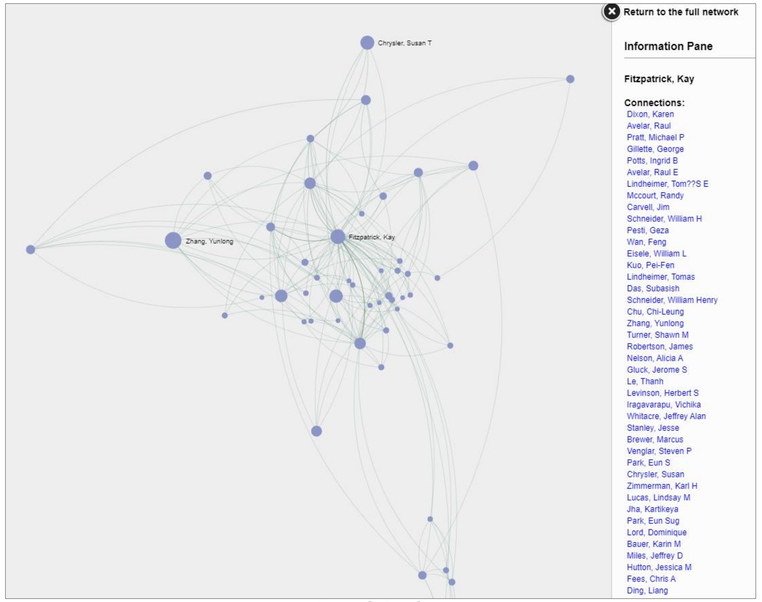
- The cutting-edge transportation research has been embracing emerging and disruptive technologies such as self-driving cars, drones, flying cars, cyber-physical infrastructure, and micro-mobility services (e.g. Uber, Lyft).
- With the consistent growth of transportation research, digital libraries such as Transportation Research Information Services Database (TRID) have been widely used by the users.
- Co-author network is an example dynamic complex network that evolves and changes over time.
- This study developed an interactive tool to show co-author networks using data from a specific journal in TRID.

## Methodology

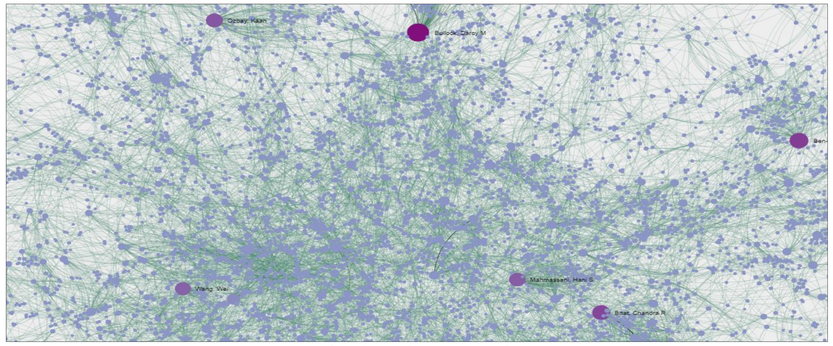
- We created co-occurrence matrices using the same set of authorship data in rows and columns to map co-authorships between authors or affiliations.
- We analyzed multiple co-author networks variants using several open-source libraries.
- We also developed a webtool using Gephi to provide interactive visualization of the co-author networks.
- The co-authorship networks help us to visualize the similarities and differences among different branches of transportation research.
- A sample interactive tool can be accessed here:
  - ➢ http://subasish.github.io/pages/gephi_html/TRR_C/network/




Interface of the Tool




Search Option



The Complex Network

## Conclusions

- Academic collaboration in the form of co-authorship is a complex phenomenon in research activities that has been widely studied in other research areas for many years.
- The findings show that prolific authors can be identified with the help of graph centrality measures that include degree and in-between centrality. It has been found that interdisciplinary ties have been increased in recent years.
- Our results suggest that co-author network analysis is an important tool for research communities targeting scientific rigor, providing data-driven information for transportation knowledge management.