User Rating Network Based Recommendation System

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Introduction

Recommendation systems is a form of content filtering based on user input and prior interaction with the system. Our project focuses on graph properties to recommend books to users based on previous user ratings. Various factors such as average ratings, popularity of books and users' reading lists are considered.
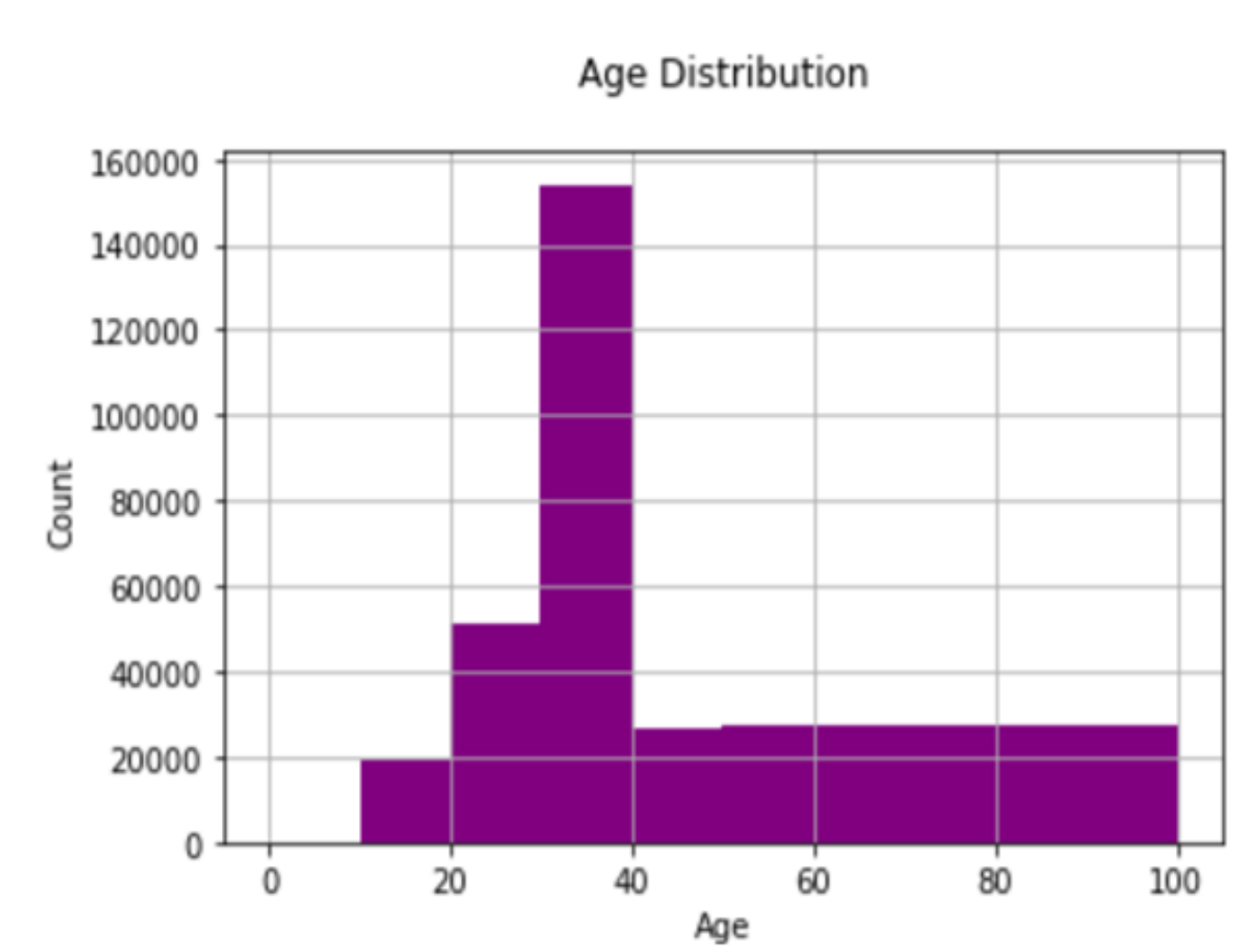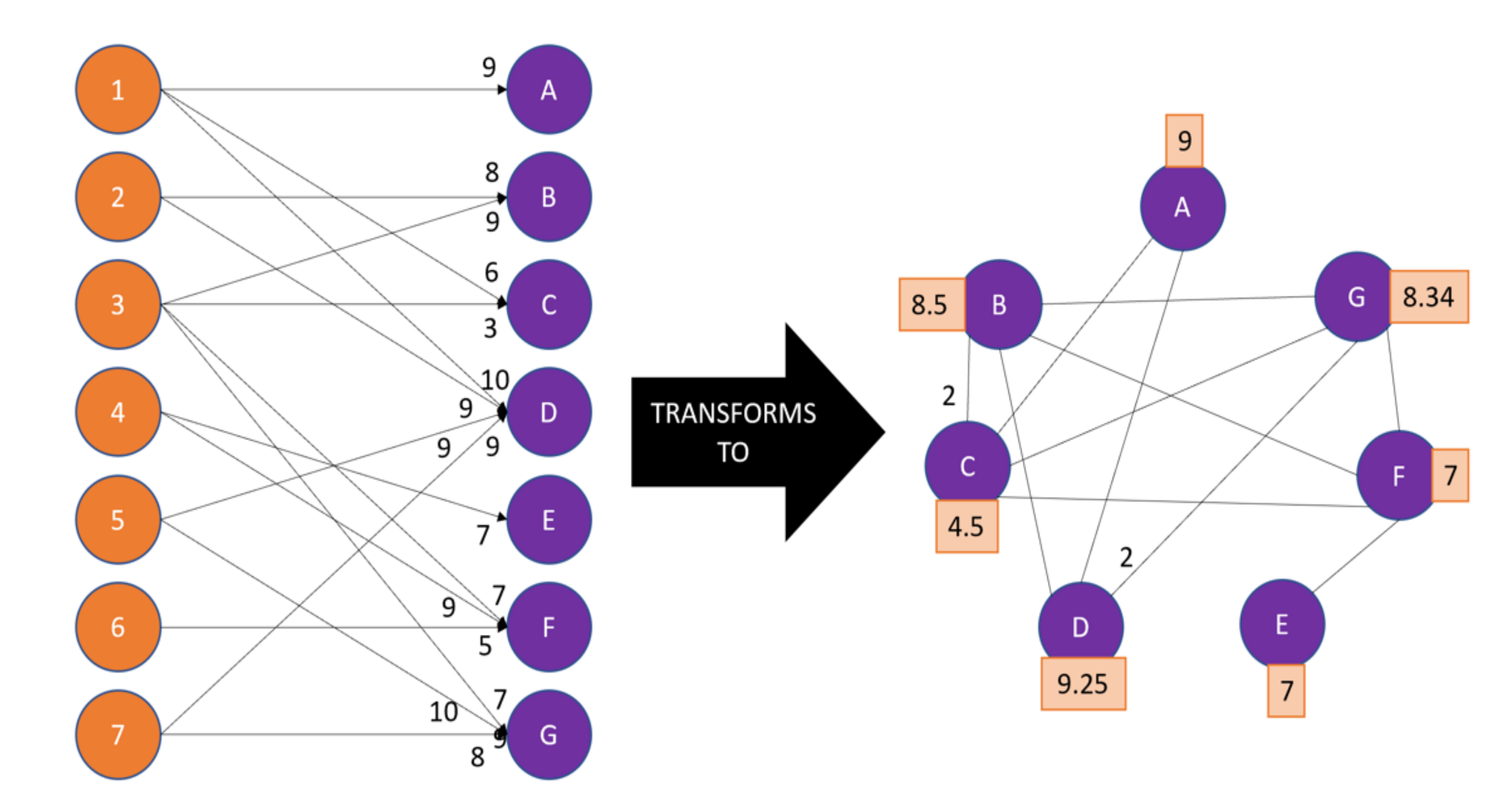
Dataset and EDA

Dataset: BookCrossing User Ratings
Users: 278854, Books: 271361

ISBN	bookRating	rating_count
0316666343	8.185290	707
0971880107	4.390706	581
0385504209	8.435318	487
0312195516	8.182768	383
0060928336	7.887500	320
059035342X	8.939297	313
0142001740	8.452769	307
0446672211	8.142373	295
044023722X	7.338078	281
0452282152	7.982014	278

Age Distribution

Rating distribution

Algorithm
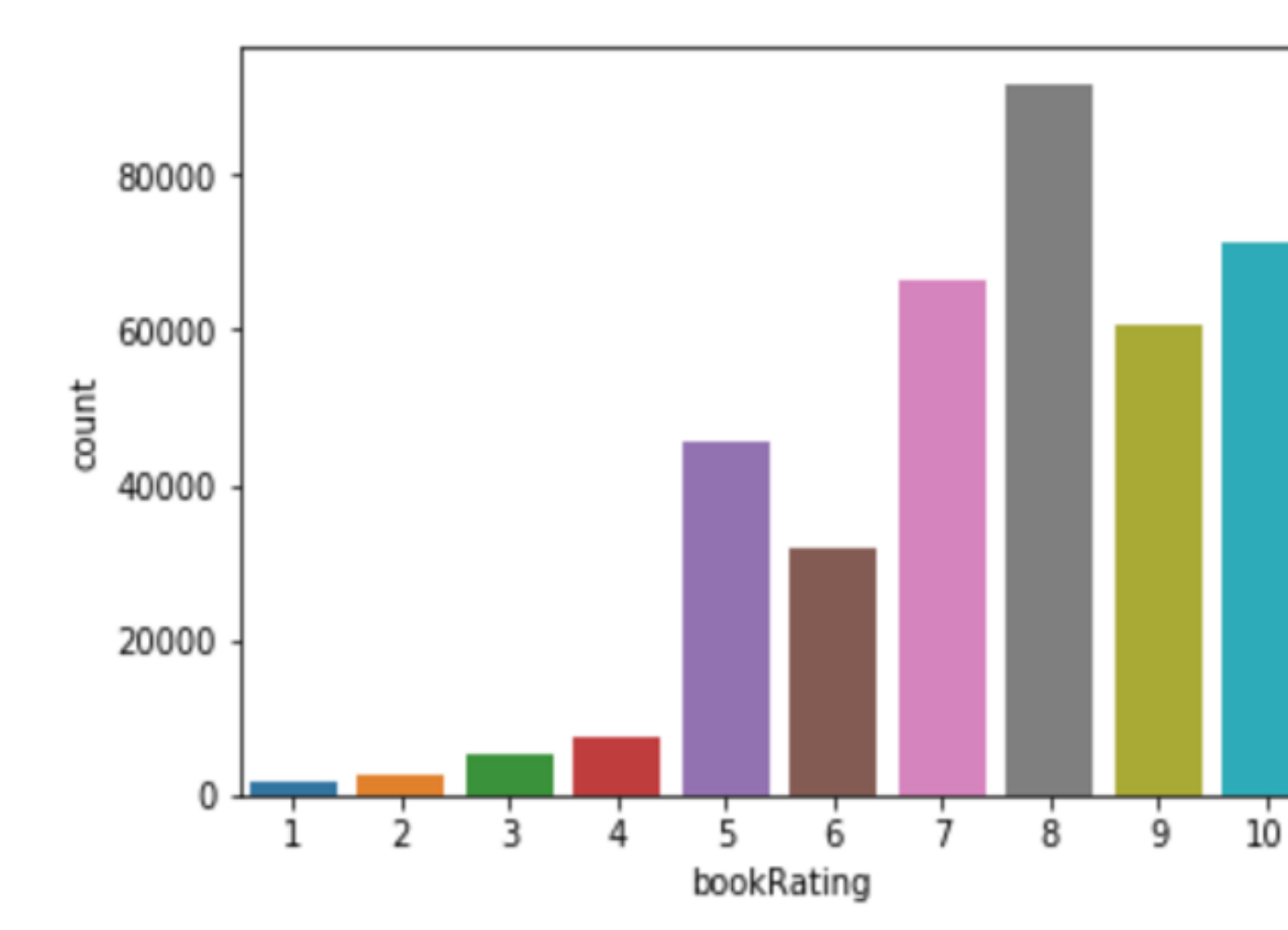
Subgraph Generation
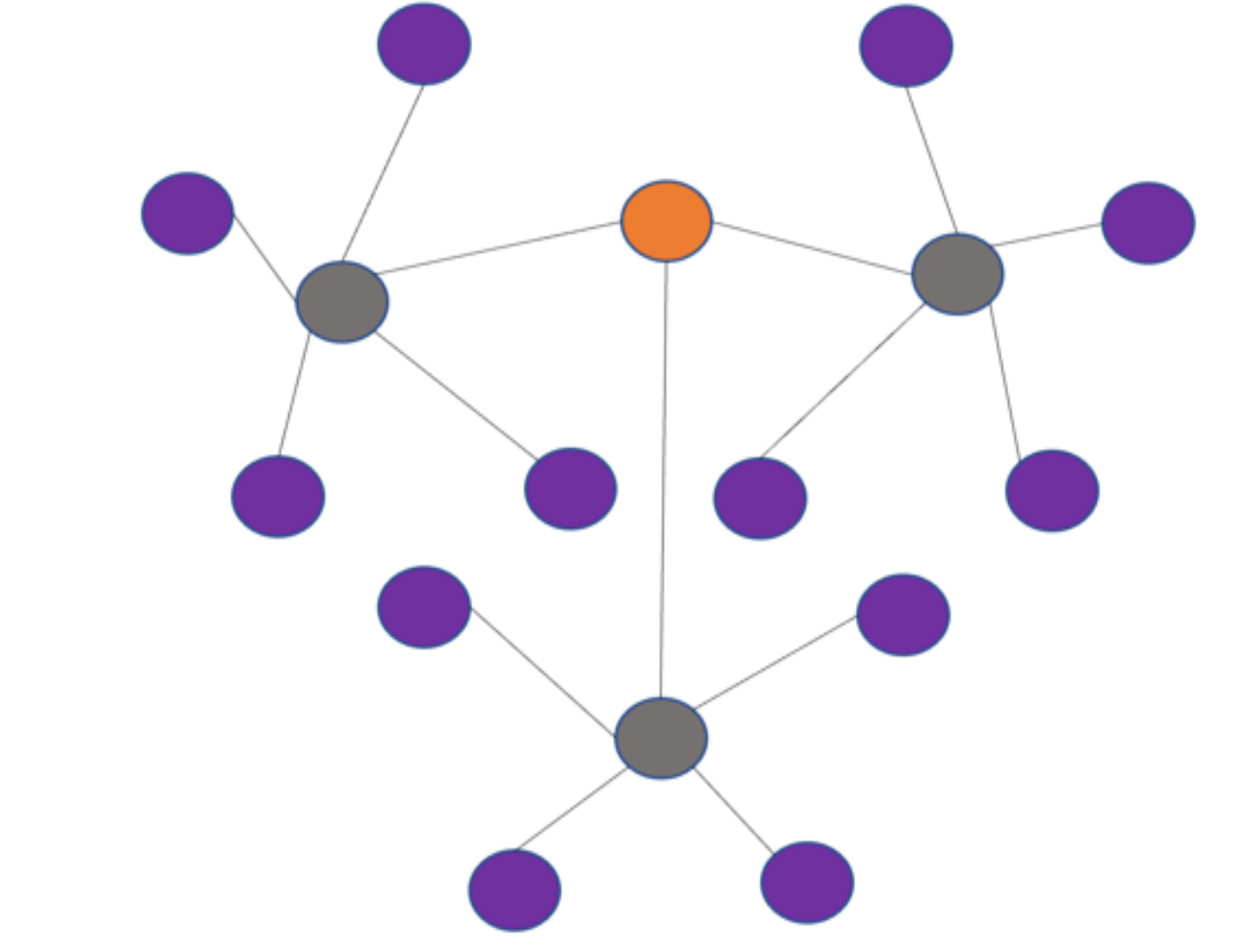
Common neighbors
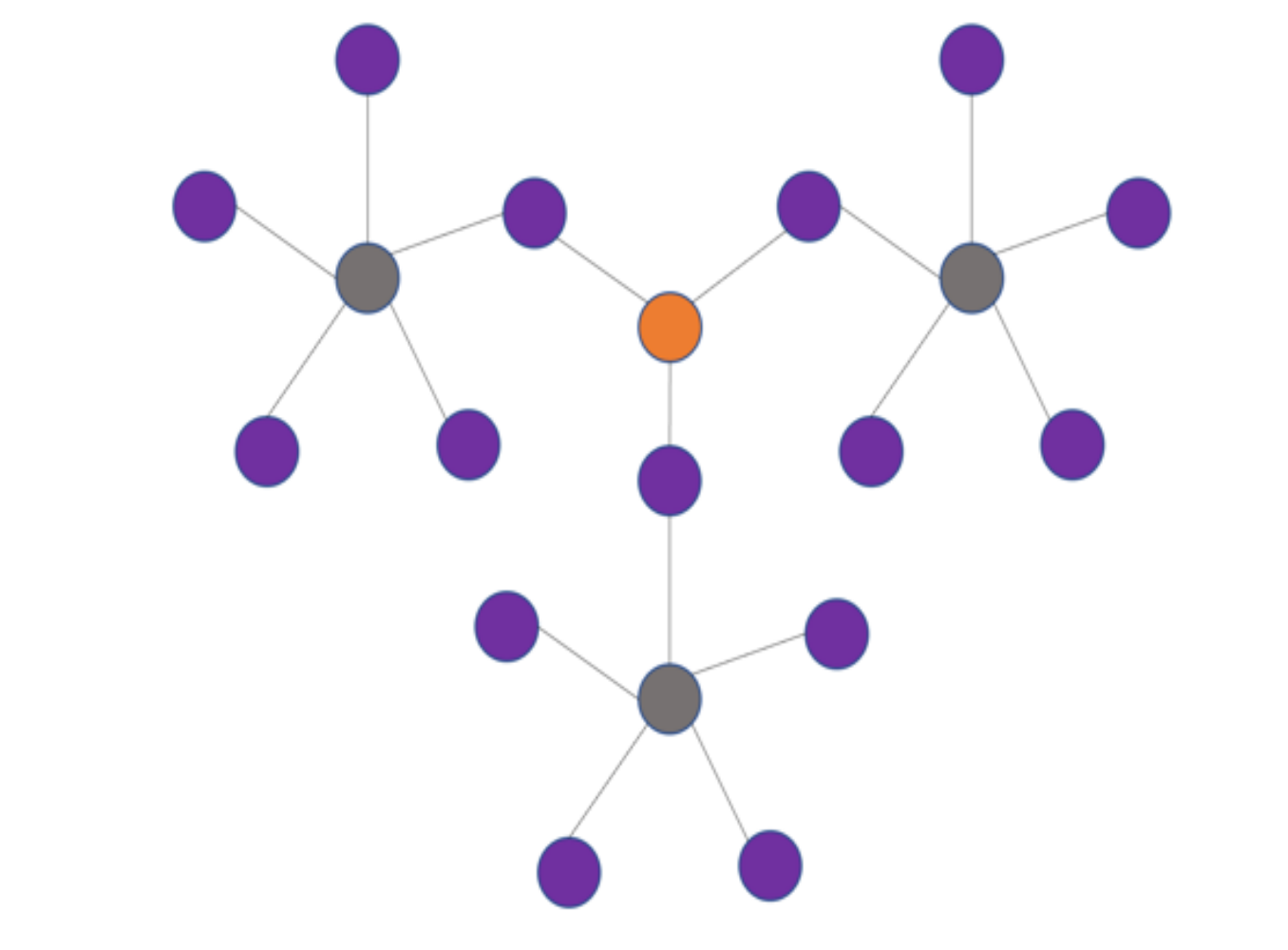
Common paths

Results and Time Analysis

Book based

User based

$y = 0.9475x - 1.1069$
$R^2 = 0.9946$

Computation time vs length of reading list