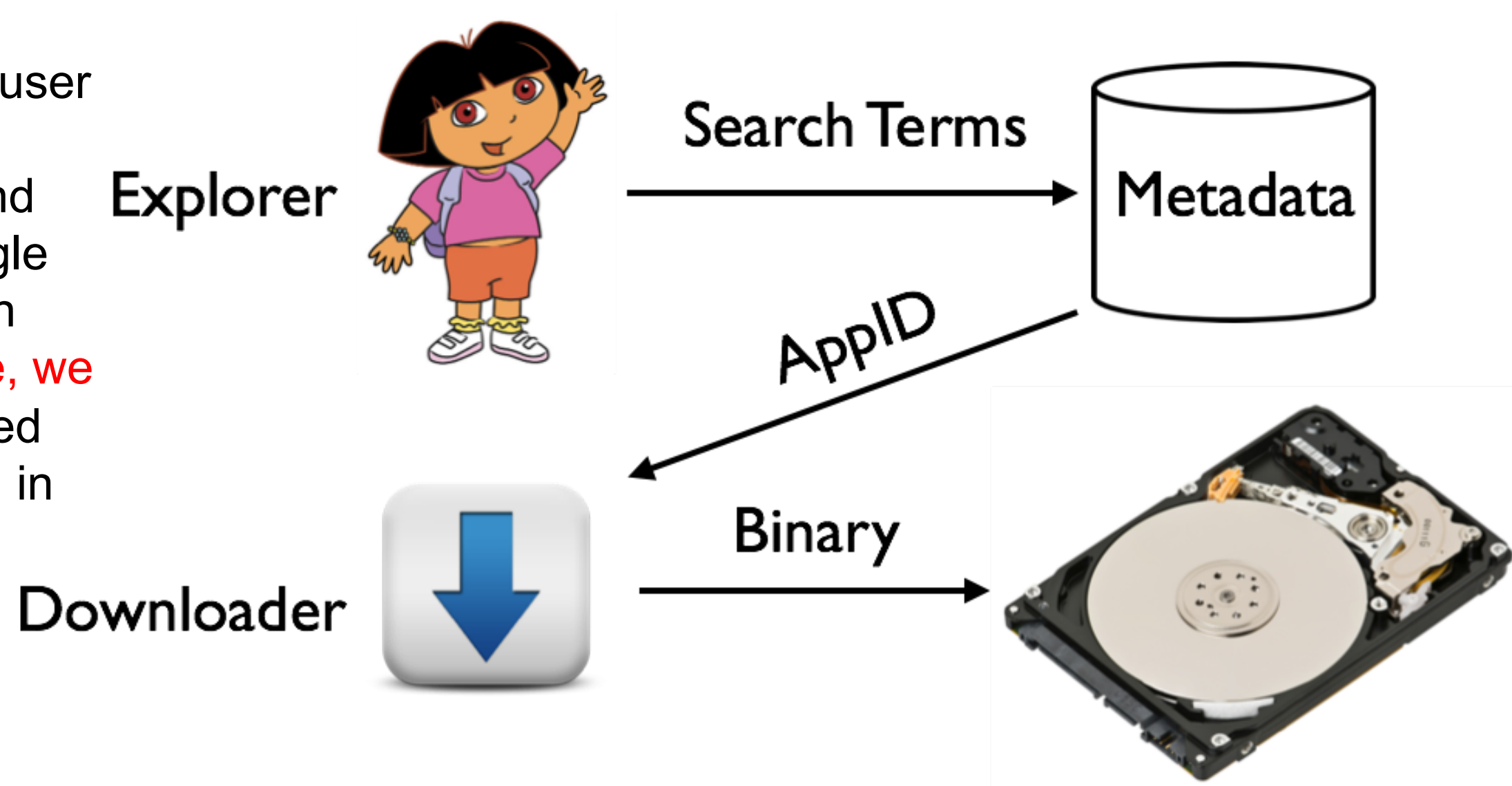


Matthew Dering, Patrick McDaniel

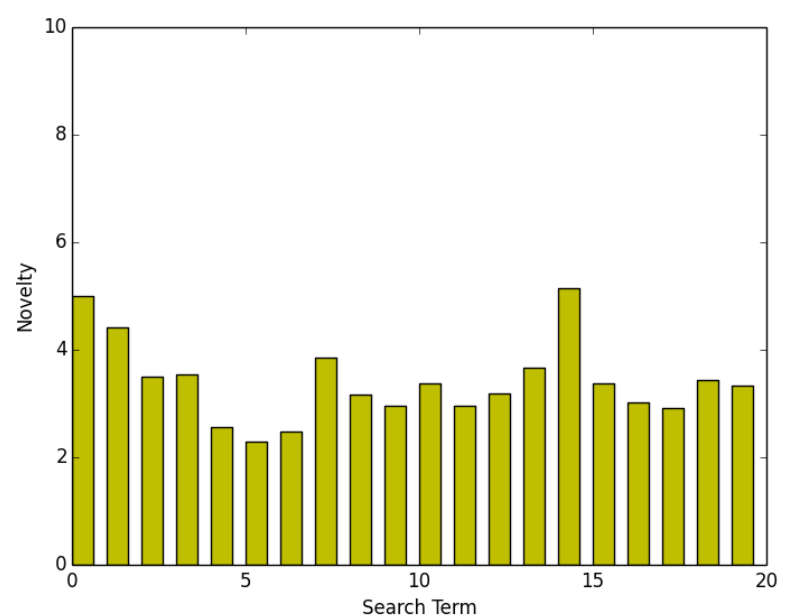
Smartphones have experienced a boom over the last 10 years. Currently a user is left to trust their device manufacturer when installing applications. In this paper we outline our suite of applications that are designed to provide us and users information about applications leveraging a reversed API for the Google Play market, working in concert with several analysis tools, some of our own design. **In order to gather as complete a picture of the market as possible, we propose a method for recreating the market in its entirety.** Using this procured data, we present an overview of how two popular Android features are used in the real world: Permissions and Libraries. We find that there is a large correlation between Library use and Permission use, which represents a security concern.



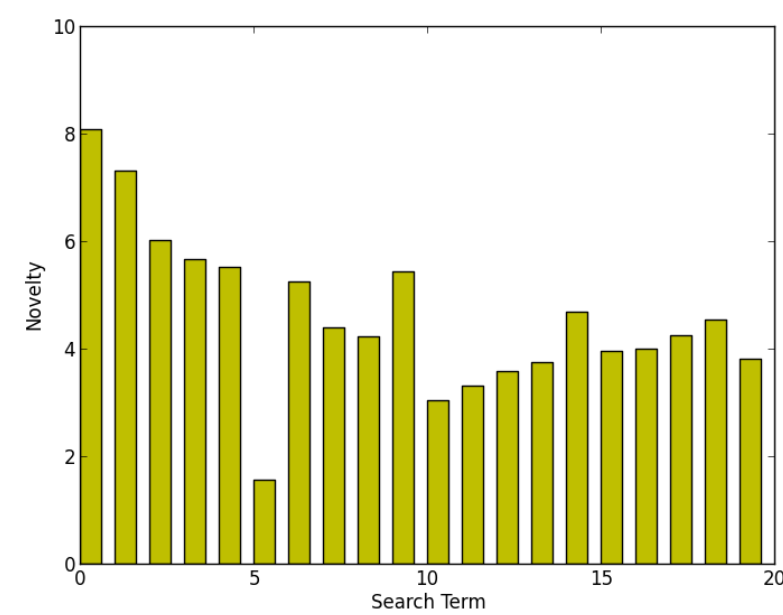
Database Reconstruction

Metadata	Binaries
Versions	
Apps	

- Wordlist Approach
- Iterative Searches
- Round Robin download using 24 accounts



Control

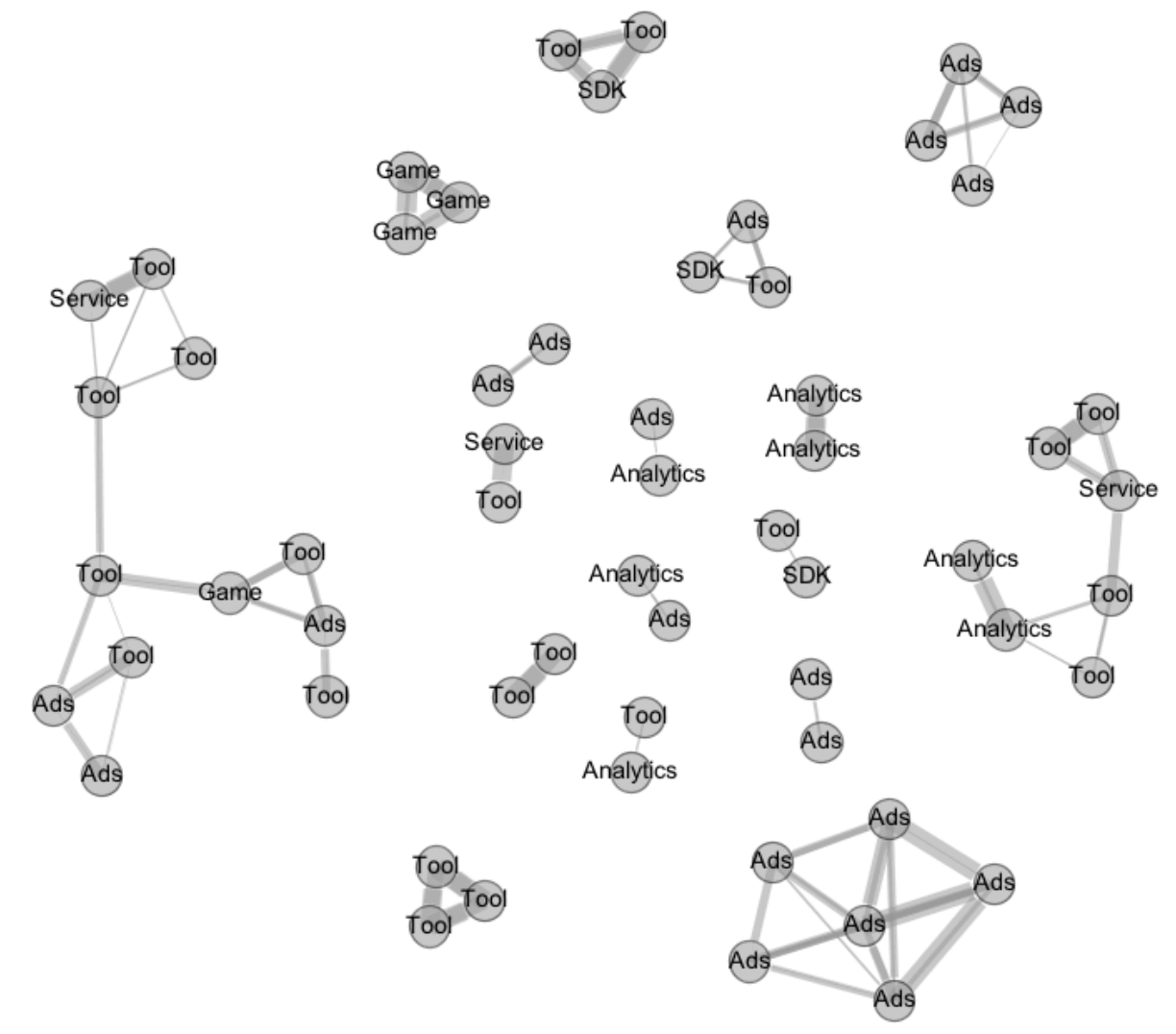


Colors

Libraries

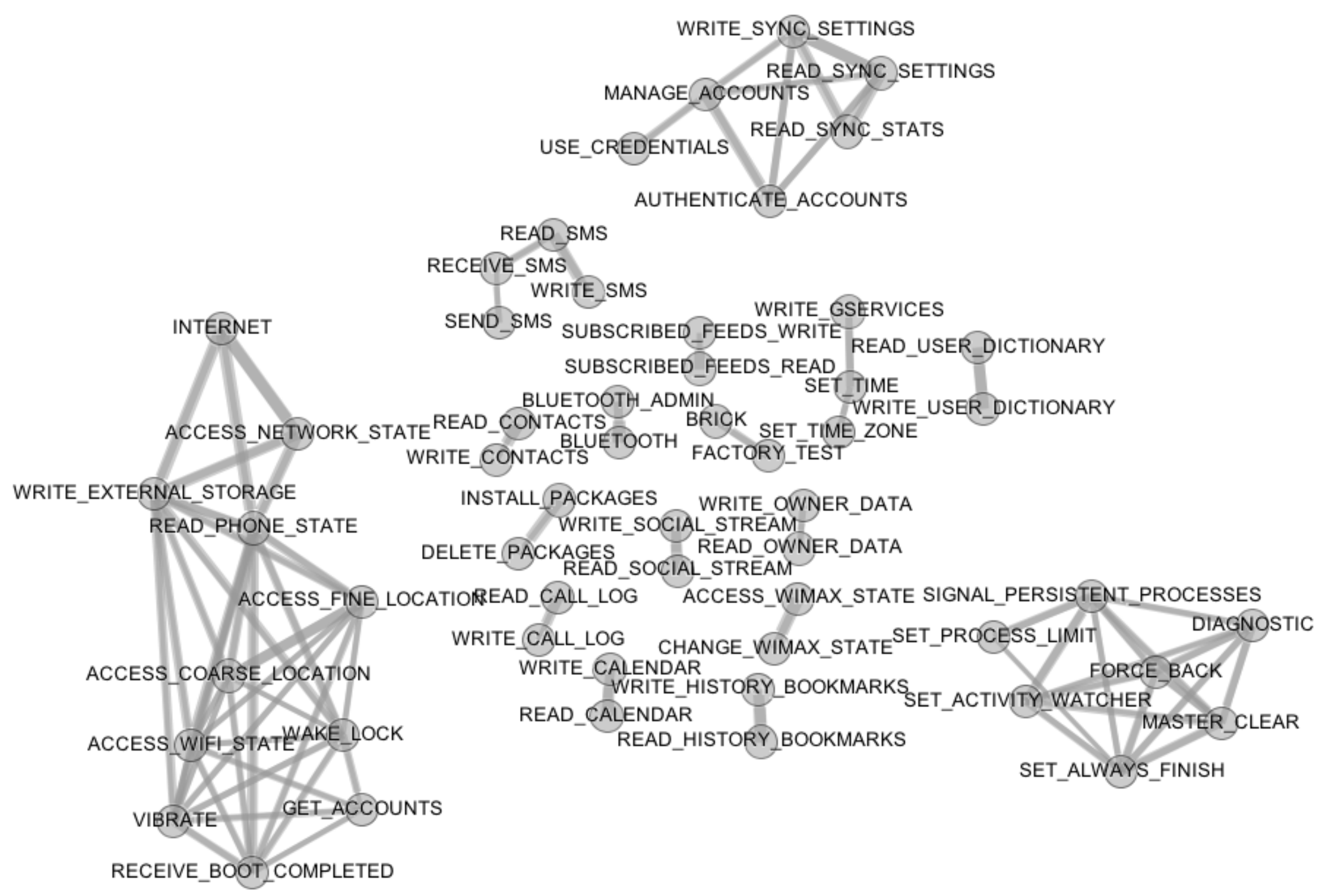
Used Jaccard Similarity Index of sets

$$J(A,B) = \frac{A \cup B}{A \cap B}$$



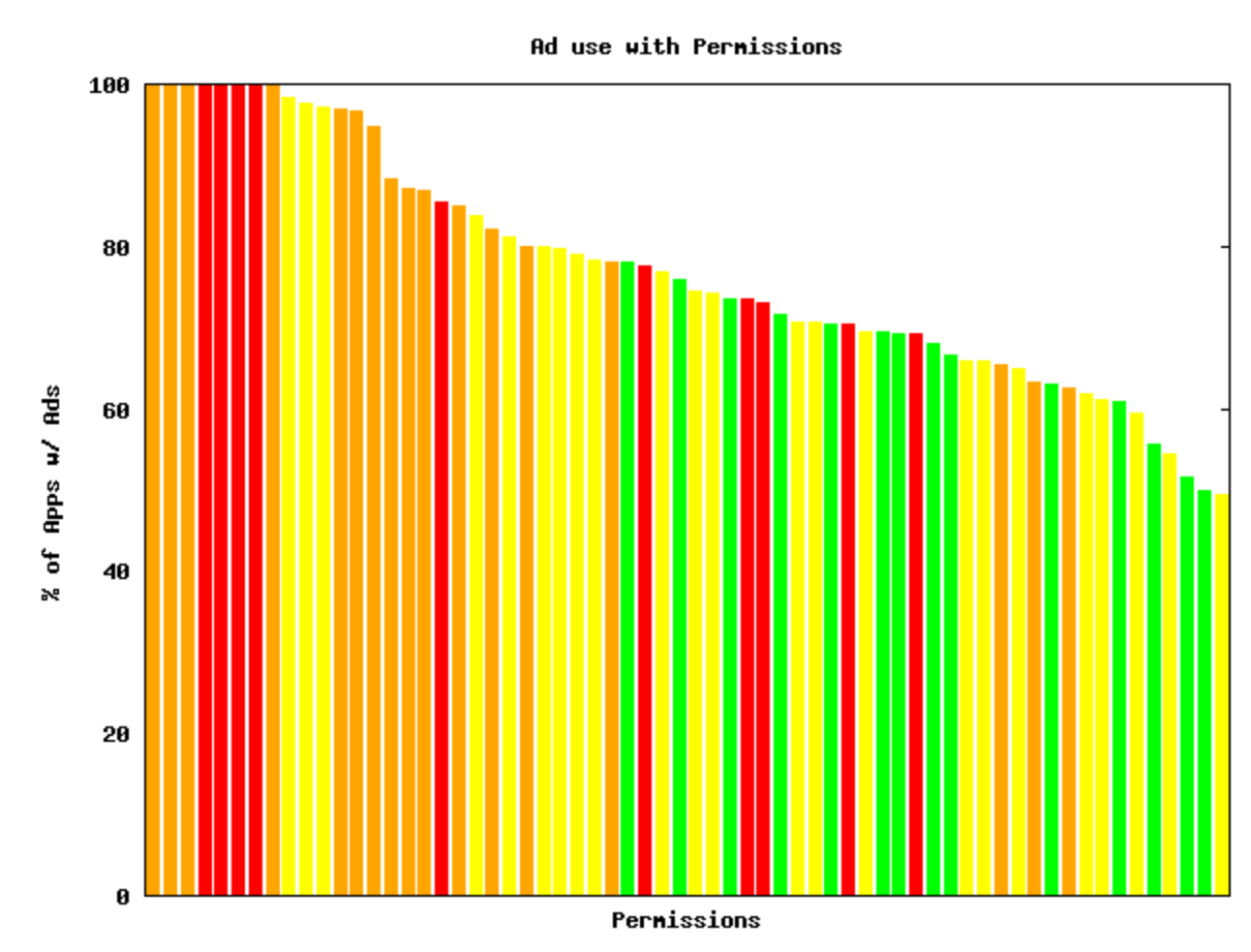
Permissions

Same method as libraries



Analysis

For a given permission, what % of applications have ads?



- All over 94%:
- READ_PHONE_STATE
 - READ_HISTORY_BOOKMARKS
 - READ_SMS
 - READ_CALL_LOG
 - READ_PROFILE
 - WRITE_CALL_LOG
 - READ_USER_DICTIONARY
 - WRITE_HISTORY_BOOKMARKS
 - RECEIVE_MMS
 - PROCESS_OUTGOING_CALLS
 - RECEIVE_WAP_PUSH
 - WRITE_SMS
 - WRITE_USER_DICTIONARY
 - USE_SIP