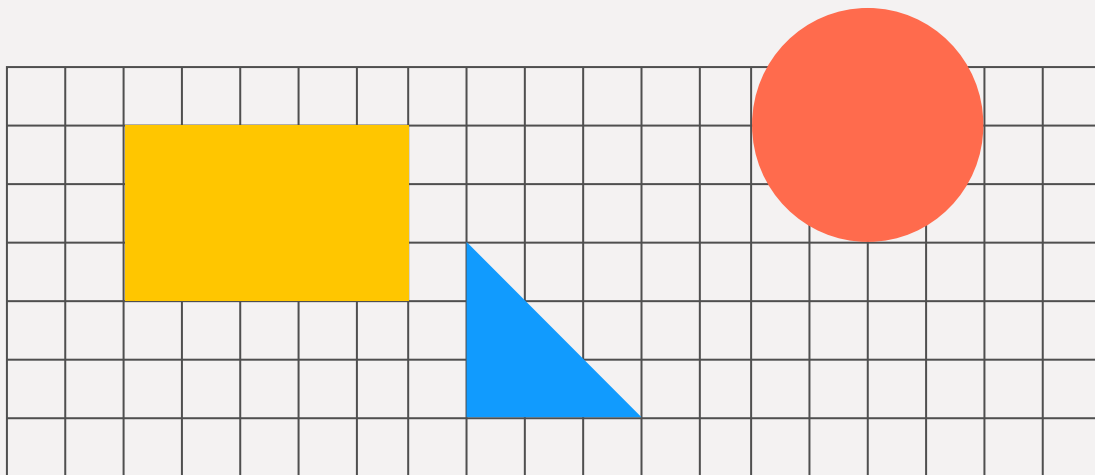# Analysing User Sentiment Shifts

Progress Report

EPPS 6323 Knowledge Mining
March 25th, 2025
By Oliver Myers

Gathering App Names and their ID's

For this first pass of the project 10 app were collected for

```r
# ======= App Store API Request =======

# Search term (edit this)
search_input <- "note taking"

# Result limit (edit this)
result_limit <- 50

# Genre ID (set to NA to ignore category filtering)
genre_id <- NA
#genre_id <- 6007

# Create a named vector mapping genre IDs to category names
genre_map <- c(
  "6000" = "Business",          "6001" = "Weather",
  "6003" = "Travel",            "6004" = "Sports",
  "6006" = "Reference",         "6007" = "Productivity",
  "6009" = "News",              "6010" = "Navigation",
  "6012" = "Lifestyle",         "6013" = "Health & Fitness",
  "6015" = "Finance",           "6016" = "Entertainment",
  "6018" = "Books",             "6020" = "Medical",
  "6022" = "Catalogs",          "6023" = "Food & Drink",
  "6025" = "Stickers",          "6026" = "Developer Tools",
)
```

```r
# Format search input (remove extra spaces and replace with "+")
search_term <- gsub(" +", "+", trimws(search_input))

# Build base URL
url <- paste0(
  "https://itunes.apple.com/search?term=", search_term,
  "&country=US&media=software&limit=", result_limit
)

# Conditionally add genre filter if it's not NA
if (!is.na(genre_id)) {
  url <- paste0(url, "&genreId=", genre_id)
}

# Get category name from genre_map (if not NA), otherwise label as "All Categories"
category_name <- if (!is.na(genre_id) && as.character(genre_id) %in% names(genre_map)) {
  genre_map[as.character(genre_id)]
} else {
  "All Categories"
}

# Define file path for saving response
output_file <- "itunes_response.txt"

# Download and save the JSON response as text
download.file(url, output_file, mode = "wb")

# Read and parse the JSON from the text file
json_data <- fromJSON(output_file)
```

```r
  "6021" = "Magazines & Newspapers",
  "6024" = "Shopping",
  "6027" = "Graphics & Design"
```

Gathering App Names and their ID's

For this first pass of the project 10 app were collected for

	trackCensoredName	trackId	userRatingCount	trackViewUrl	genres
1	Notability: Smarter AI Notes	360593530	389941	https://apps.apple.com/us/app/notability-smarter-a...	Productivity, Education
2	Goodnotes 6	1444383602	308094	https://apps.apple.com/us/app/goodnotes-6/id144...	Productivity, Education
3	Nebo: AI Note Taking	1119601770	35780	https://apps.apple.com/us/app/nebo-ai-note-taking...	Productivity, Education
4	Write 2 Lite – Note Taking & Writing	426875254	33	https://apps.apple.com/us/app/write-2-lite-note-ta...	Productivity, Business
5	Flow: Note Taking, Drawing Pad	1271361459	6946	https://apps.apple.com/us/app/flow-note-taking-dr...	Productivity, Graphics & Design
6	AI Transcribe: Voice Recorder	6451444706	5123	https://apps.apple.com/us/app/ai-transcribe-voice-...	Utilities, Music
7	Sticky Notes App & Remind Note	608937293	5603	https://apps.apple.com/us/app/sticky-notes-app-re...	Productivity, Utilities
8	Noteful: Note–Taking on PDF	1587904334	16194	https://apps.apple.com/us/app/noteful-note-taking...	Productivity, Business
9	AI Note Taker – TLDL	6590628538	1459	https://apps.apple.com/us/app/ai-note-taker-tldl/i...	Education, Reference
10	Great Notes for iPhone & iPad	1591954297	1336	https://apps.apple.com/us/app/great-notes-for-iph...	Books, Productivity

Getting stats on this list

I wanted to know **genre frequency** and the **top 5 apps** to be our test set (for the stats I used 50+ apps filtered for those that had at least 5k reviews

```
# ======= Running Stats on the search results =======

# Filter apps with ≥ 5,000 reviews
apps_filtered <- subset(apps_df, userRatingCount >= 5000)

# Separate all genre strings into individual words
# Split each comma-separated string into a list, then flatten it
genre_words <- unlist(strsplit(apps_filtered$genres, ",\\s*"))

# Normalize case (e.g., "Productivity" = "productivity")
genre_words <- tolower(genre_words)

# Count frequency of each individual genre
genre_freq <- sort(table(genre_words), decreasing = TRUE)

# Show frequency stats
cat("\n📊 Genre Word Frequency (Filtered Apps ≥ 5,000 reviews):\n\n")

for (i in seq_along(genre_freq)) {
  genre <- names(genre_freq)[i]
  count <- genre_freq[i]
  cat(paste0("📚 ", tools::toTitleCase(genre), " - ", count, " time", ifelse(count > 1, "s", ""), "\n"))
}
```

```
+   cat(paste0("📚 ", tools::toTitleCase(genre), " - ", count
+ }
📚 Productivity - 13 times
📚 Education - 6 times
📚 Utilities - 4 times
📚 Business - 2 times
📚 Graphics & Design - 1 time
📚 Music - 1 time
```

1. Microsoft OneNote
   📩 Ratings: 956,397
   📅 Genres: Productivity, Education

2. Notes
   📩 Ratings: 427,238
   📅 Genres: Productivity

3. Notability: Smarter AI Notes
   📩 Ratings: 389,941
   📅 Genres: Productivity, Education

4. Goodnotes 6
   📩 Ratings: 308,094
   📅 Genres: Productivity, Education

5. Otter Transcribe Voice Notes
   📩 Ratings: 41,854
   📅 Genres: Productivity, Business

Shiny App Part 1

First, Put in Search terms and a General if desired, then search for apps you want to analyse

Search Term:

Notes App

Genera:

N/A ▲

| N/A |
| Business |
| Weather |
| Utilities |
| Travel |
| Sports |
| Social Networking |
| Reference |

~/MyWebsite/App_Sentiment_Project - Shiny

http://127.0.0.1:4750 | 📄 Open in Browser | 🔄   🔄 Publish ▾

Shiny iTunes App & Review Explorer

Search Term:

Notes App

Genera:

N/A ▾

[Search] [Start Over]

Show [10 ▾] entries   Search: [   ]

	App	trackId	userRatingCount
1	Notes	1110145109	437011
2	Goodnotes 6: AI Notes & Docs	1444383602	314949
3	Notability: Smarter AI Notes	360593530	394699
4	Microsoft OneNote	410395246	961415
5	Quizlet: Study with Flashcards	546473125	916488
6	Remind: School Communication	522826277	1646177
7	Dropbox: File & Photo Storage	327630330	560204
8	CamScanner - PDF Scanner App	388627783	1565660
9	Evernote - Notes Organizer	281796108	68646
10	Adobe Acrobat Reader: Edit PDF	469337564	499461

Showing 1 to 10 of 58 entries   Previous 1 2 3 4 5 6 7 Next

Shiny App Part 2

Once an App is selected, the review comments and other data is scraped and cleaned.

title	review_comment	username	id	updated	rating	version
great app!	i've been using this app for engineering schoolwork f…	Dchdbgcbdxb	12542260920	2025-04-14 13:15:08	5	14.11.7
great! until it's not	don't get me wrong, this app is certainly useful in ter…	lwill15	12541966719	2025-04-14 11:42:27	2	14.11.7
need to fix troubleshooting	used yall for years but yall really need to fix how yall …	jaimmmmmmmeeeeeeeesssswss	12541095679	2025-04-14 05:24:20	2	14.11.7
a must need app for college/ school	this app has gotten me through my hardest years of c…	izzy.bellaa	12540760930	2025-04-14 02:47:21	5	14.11.7
amazing app! good price	great app i love it so much so much	rubyrulz101	12540572163	2025-04-14 01:27:27	5	14.11.7
needs a better storage option	this app has been great for writing notes especially as…	Basiwa	12540306170	2025-04-13 23:35:43	3	14.11.7
a total game-changer for capturing and summarizing…	i have been using notability for years and it just gets …	gareman_94061	12539957142	2025-04-13 21:12:17	5	14.11.7
takes forever to sync even for the notes i didn't open …	it's so annoying that i need to wait for the syncing pr…	sshsgeushds	12539595920	2025-04-13 19:03:55	1	14.11.7
cross-platform notetaking… but more	i use notability to take notes. i also use it to organize …	Bre'er Me	12538546349	2025-04-13 13:57:13	4	14.11.7
page insert feature	i appreciate the effort that seems to be put into this a…	ClintEastwood22	12536470015	2025-04-13 01:02:18	3	14.11.7
all notes disappeared	this app used to be amazing but every time it has an …	mntrbclsg	12535975371	2025-04-12 21:44:05	2	14.11.7
idk	this with my keyboard and smart pencil has tremendo…	B harv 90	12535924233	2025-04-12 21:24:05	5	14.11.7
good but	i really like this app and the ai questions are good but…	Lolamalona	12535149476	2025-04-12 17:05:29	3	14.11.7
false discriptions	the premium version of this app claims that you get u…	ShlebyjK	12534817067	2025-04-12 15:33:01	1	14.11.7
perfect but where did the goose go 😭	i love it! but i miss the goose! ❤️‍🩹	Salsa333	12534013962	2025-04-12 11:55:58	5	14.11.7
horrible for iphone, good for ipad	notability performs exceptionally well on the ipad. it …	Ishwor093	12533666452	2025-04-12 09:56:59	1	14.11.7

Initial Analysis of reviews
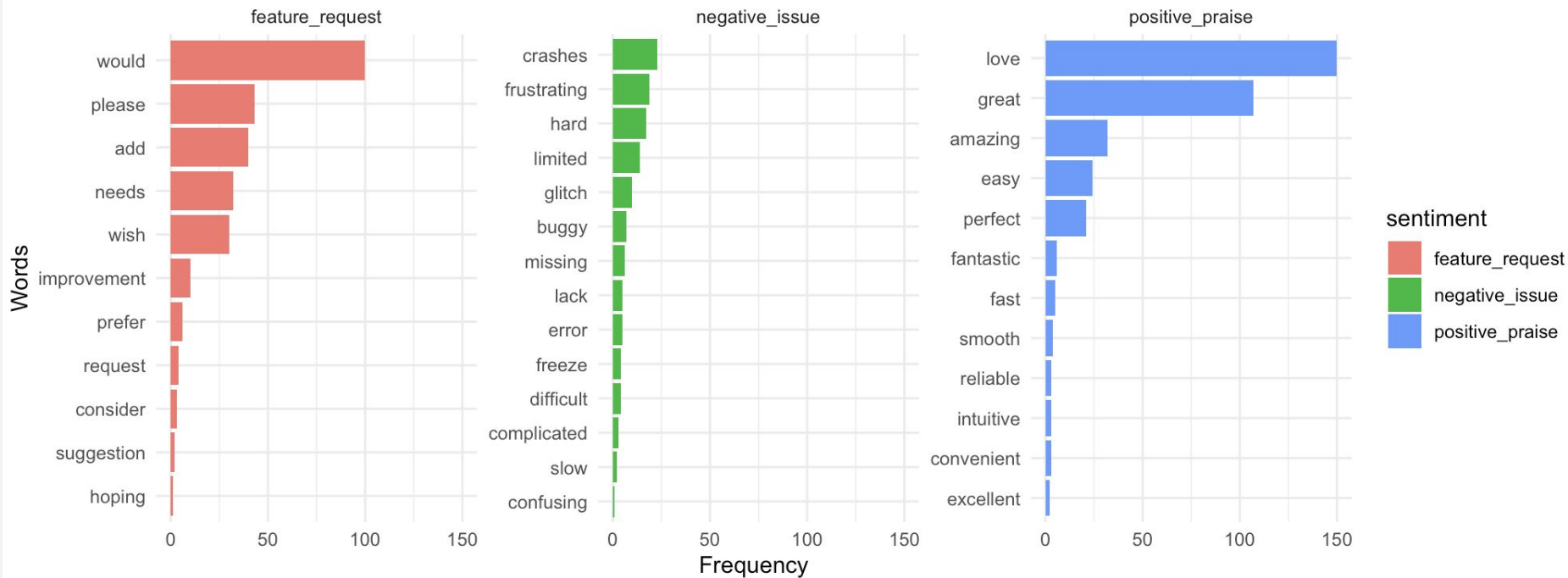
-

Top 50 Frequent Words in Comments

Sentiment Analysis

-

Sentiment Word Frequency by Category

Looking at User Sentiment

- Gather User Sentiment:
    - **Positive / Negative**
    - **Pain Points**
    - **App Use Cases**
    - **Desired Features**
- Break up Sentiment by Release Date
- Look at User Sentiment for one app among other competitors