

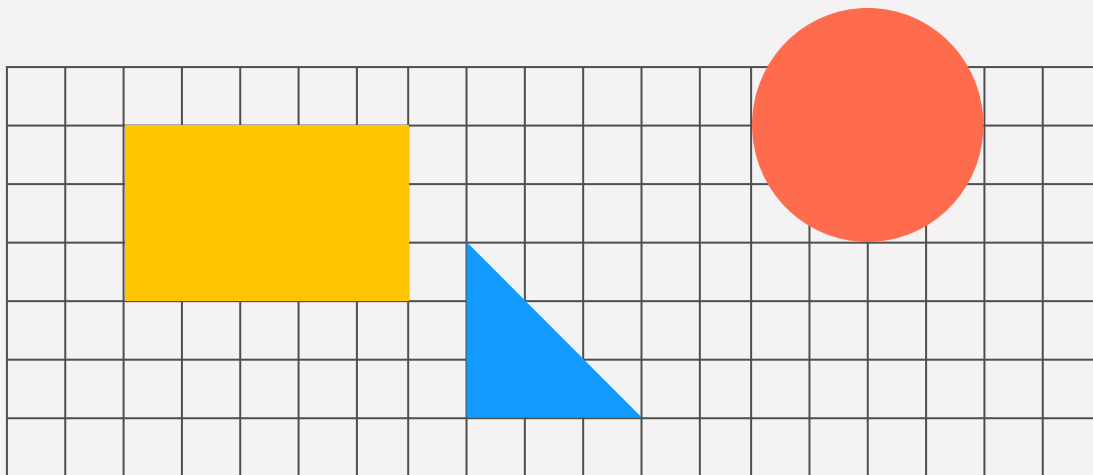
Analysing User Sentiment Shifts

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

```
# ===== 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",

```
# 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)

"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

```
# ===== 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
```

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)

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:

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:

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 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...	Dchdbgcdbxb	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 ...	jaimmmmmmmeeeeeeeeessswss	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...	sshsgeshds	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 ...	mnrbcclsg	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

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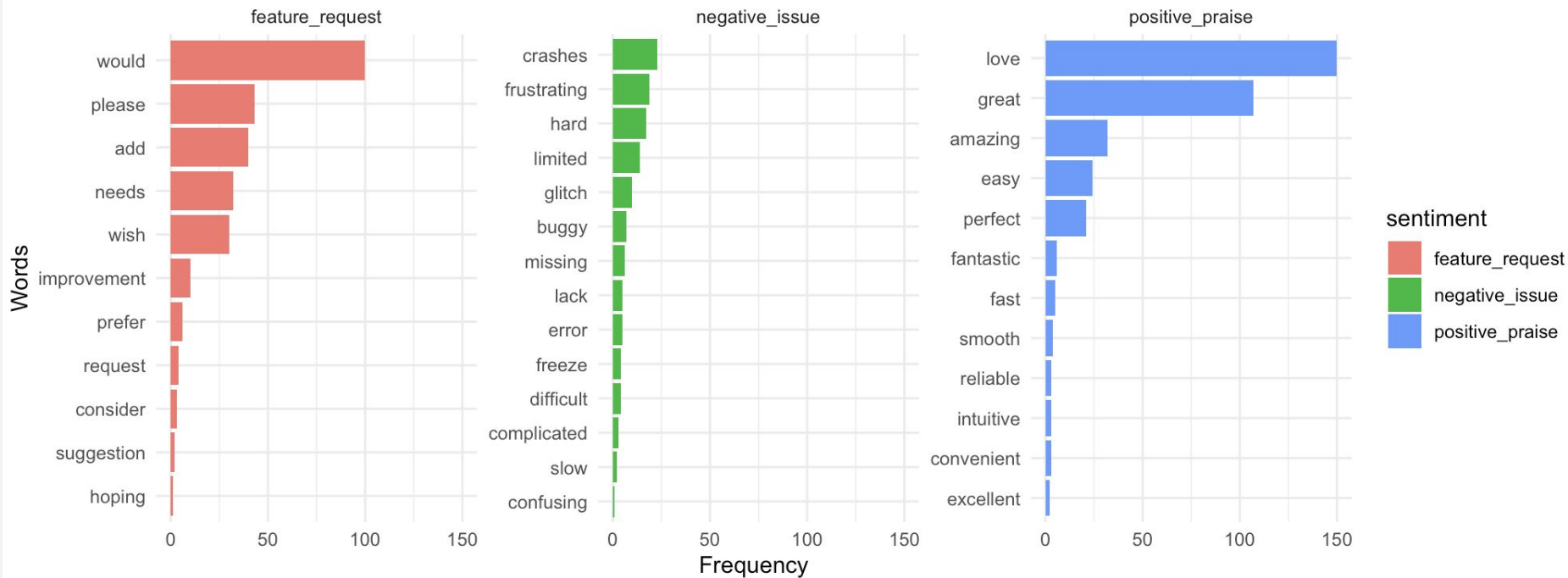
Top 50 Frequent Words in Comments

Word	Frequency (approx.)
app	100
notes	85
notability	65
use	60
it's	55
just	52
love	50
now	48
like	45
note	45
time	42
years	42
can	40
using	38
one	35
taking	35
subscription	32
i've	30
i'm	30
get	30
back	30
used	30
pay	30
great	30
work	30
ipad	30
don't	28
even	25
need	25

Word

Sentiment Analysis

Sentiment Word Frequency by Category



UX Issue Prioritization by Heuristic

Date Range

2025-01-22

to

2025-04-14

App Version

14.10.11

	Heuristic	Number of Issues	Priority Score
1	Error Prevention	17	46

2	Help Users Recover	8	13
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3	Other	34	11
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4	User Control & Freedom	9	11
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5	Flexibility & Efficiency	3	9
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6	Visibility of System Status	16	9
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7	Help & Documentation	6	3
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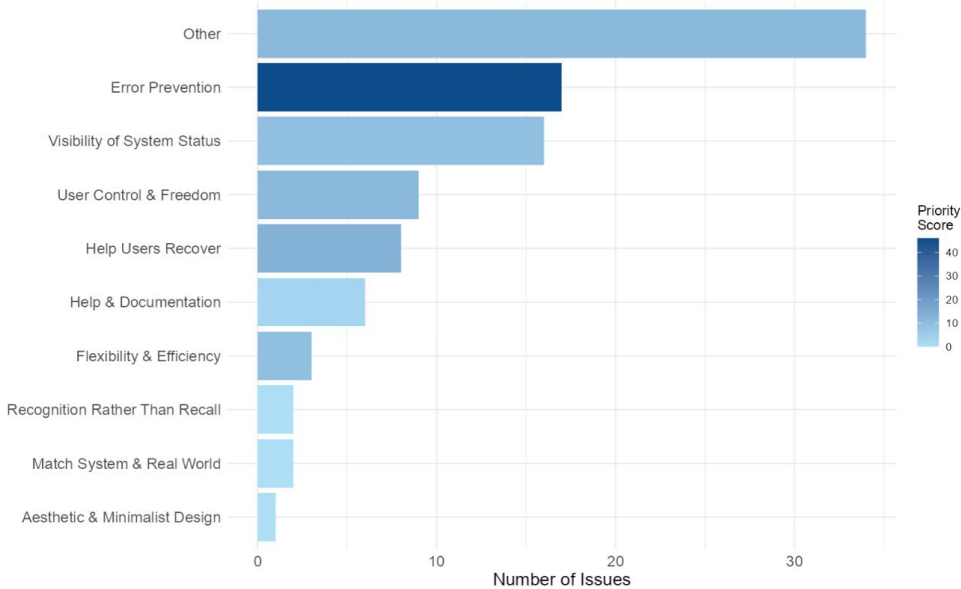
8	Aesthetic & Minimalist Design	1	0
---	-------------------------------	---	---

	Match System		
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Issue Frequency

Details

Issue Frequency by Heuristic



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4	User Control & Freedom	9	11
5	Flexibility & Efficiency	3	9
6	Visibility of System Status	16	9
7	Help & Documentation	6	3
8	Aesthetic & Minimalist Design	1	0
9	Match System & Real World	2	0
10	Recognition Rather Than	2	0

Issue Frequency

Details

Examples for: Visibility of System Status

	Date	Version	Sentence	Severity
1	2025-02-18	14.10.11	great study tool. amazing for powerpoints to download and write on	Low
2	2025-02-17	14.10.11	absolute best electronic notes. hands down the best electronic note taking app. i like how i can sync the app on all my devices. when in class i have the ability to record lectures to review my notes. on top of recording i can take notes and the recording will highlight my notes on the play back so i can review exactly what notes i took while recording the lecture, down to the second. i like that i have the ability to input images in my notes, highlight and insert text boxes within my notes!	Low
3	2025-02-15	14.10.11	frequent glitches. it has a lot of features that are really helpful, but at times it glitches, doesn't load properly, or freezes on me. it is very frustrating when this happens and i have to stop what i am doing to close out of the app completely. hopefully this will be fixed soon	Medium
4	2025-02-14	14.10.11	just don't. i first got this app years ago, i believe in 2019. at first i liked it. i eliminated having to carry around different notebooks and had notes in one area. i was even able to record classes so i could go back and listen. then one day i went to study for a final and everything was gone. i was devastated, all that work just gone. i stopped using it at that point, aggravated that everything was gone. but i decided to give them another chance since i had paid for the app. it is horrible, it freezes and deletes things i've worked on with no way to recover. now when opening the app i just get a black screen, sometimes there's a loading circle sometimes not. it is incredibly frustration.	Low
5	2025-02-14	14.10.11	just don't. i first got this app years ago, i believe in 2019. at first i liked it. i eliminated having to carry around different notebooks and had notes in one area. i was even able to record classes so i could go back and listen. then one day i went to study for a final and everything was gone. i was devastated, all that work just gone. i stopped using it at that point, aggravated that everything was gone. but i decided to give them another chance since i had paid for the app. it is horrible, it freezes and deletes things i've worked on with no way to recover. now when opening the app i	Low

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

