



hopper

# Hopper

A Look at Usability, Privacy, and Security

Darlene Rosa  
Fall 2020 @ Baruch College  
CIS 3770 - Prof. Benbunan-Fich





# App Information

name: Hopper Inc

release: 9/15/2020

version: 6.44.0

downloads: 51,755,000 (9/20/20)

star ratings: 4.8 out of 5

purpose of project:  
to analyze Hopper's iOS and Android app for  
usability, privacy, and security

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12:35 PM 12:35 PM 12:36 PM 12:36 PM 12:36 PM

CLT – EWR Round Trip CLT – EWR One Way Choose Dates

Round trip One way

Filters

Choose Your Flight Dates

\$25+ \$35+ \$45+ \$55+ USD(USD)

October > November >

December > January >

1 2 3 4 5  
6 7 8 9 10 11 12  
13 14 15 16 17 18 19  
20 21 22 23 24 25 26  
27 28 29 30 31

3 4 5 6 7 8 9

STAY INFORMED

\$0 Changes Learn more about waived fees

Charlotte to Newark

Round trip One way

Filters

Choose Your Flight Dates

\$55+ \$65+ \$75+ \$85+ USD(USD)

October > November >

December > January >

1 2 3 4 5  
6 7 8 9 10 11 12  
13 14 15 16 17 18 19  
20 21 22 23 24 25 26  
27 28 29 30 31

1 2





◀ App Store 12:37 PM 45% ◀

CLT – EWR Dec 23 Filters



Current Lowest Price:  
**\$34** / traveler

You should wait for a better price.  
You could save as much as \$10 per ticket by watching this trip.

 **Free Price Drop Guarantee** ⓘ  
Don't feel like waiting? Book now and we will automatically refund you up to US\$25 Hopper Credit if the price drops.

**Watch This Trip** | 

**Buy now, pay later** ⓘ  
US\$16.00 deposit, pay 14 days later **Price Freeze**

**\$34** Wait  
One way, per traveler **View Flights**

◀ App Store 12:37 PM 45% ◀

CLT – EWR Dec 23

**Outbound to Newark (EWR)**  
Dec 23 One Way, Per Traveler

**\$0 Changes**  
Many airlines are waiving change fees to give you more flexibility to change plans. Hopper will identify those so you can book with peace of mind.



**Ok, got it!** More Information

◀ App Store 12:37 PM 45% ◀

CLT – EWR Dec 23

**Outbound to Newark (EWR)**  
Dec 23 One Way, Per Traveler

**Filter** **Sort • Recommended**

**All** Basic Standard Enhanced Premium

**Best Flight** ⓘ  
\$0 C We've grouped fares based on amenities included. Tap on these categories to compare! ⓘ  
6:10 am - 8:01 pm American Airlines 1h 51m X \$34 Main Cabin Nonstop

**Fastest** ⓘ  
**\$0 Changes** ⓘ  
10:31 pm - 12:21 am+1d \$191 American Airlines 1h 50m Nonstop First

**MORE FLIGHTS**

**\$0 Changes** ⓘ  
10:55 am - 7:01 pm \$211



# Usability Analysis

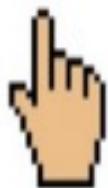
## 10 Heuristics:

*A set of guidelines for creating usable GUIs (graphical user interfaces)*



Visibility of System Status

1



Match Between System & Real World

2



User Control And Freedom

3



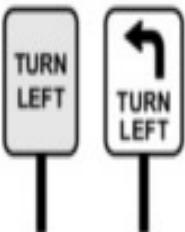
Consistency And Standards

4



Error Prevention

5



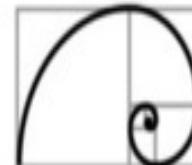
Recognition Rather Than Recall

6



Flexibility And Efficiency of Use

7



Aesthetic And Minimalistic Design

8



Help Users With Errors

9



Help And Documentation

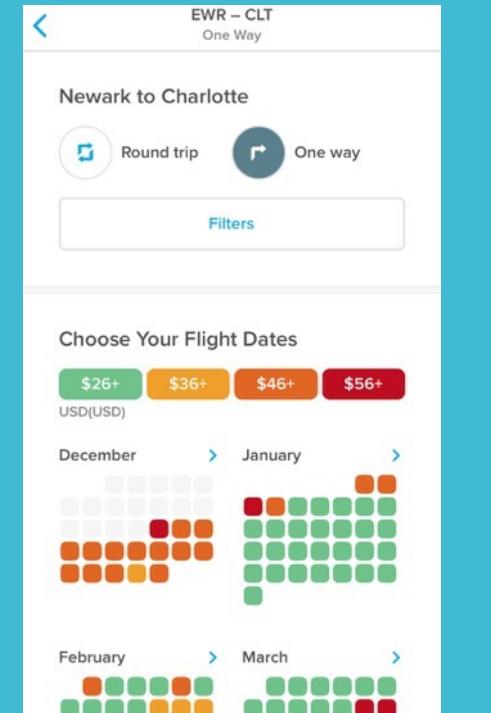
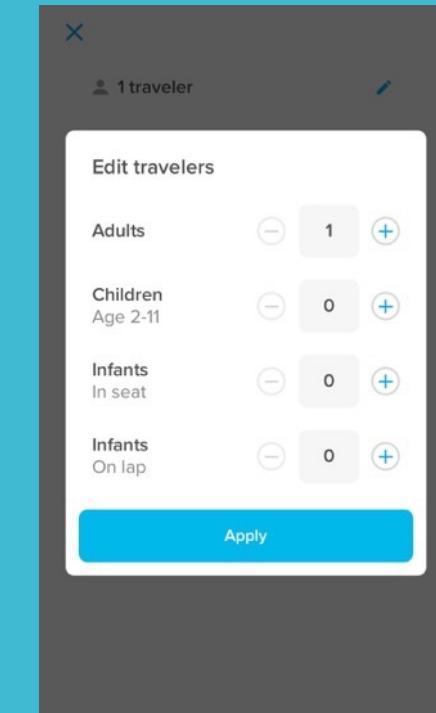
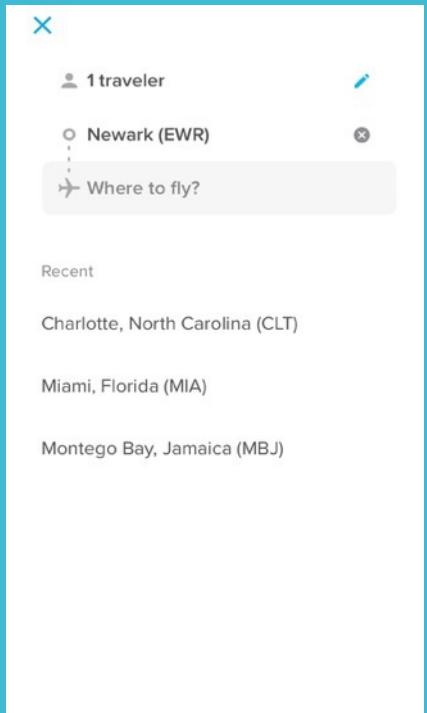
10





# Usability Analysis

## Hopper Violations



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# Think Aloud Study

Participant: 32 year-old male

Version 4.56 on Google Play Store

## TASK LIST

Task 0: Download app on your phone

**Task 1: Find a one-way flight from CLT to EWR for 12/23/2020**

**Task 2: Filter the flights by layover time and sort by price**

**Task 3: Book the least expensive “nonstop only” afternoon flight scheduled to depart before 3:00PM EST**

**Click >>> Watch on YouTube (<https://youtu.be/CCxLDW3ldco>)**

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# Results and Main Findings

App had many errors and glitches causing the user to spend dead time in the app

The side by side “sort” and “filter” button are redundant

There is not enough confirmation provided of successful transactions within the app

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# Usability Recommendations

Redesign sort and filter options

Reduce the number of add-on services to keep price low and users engaged

Offer users options to sign up with an email

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# Privacy Analysis

Personally Identifiable Information  
(PII):

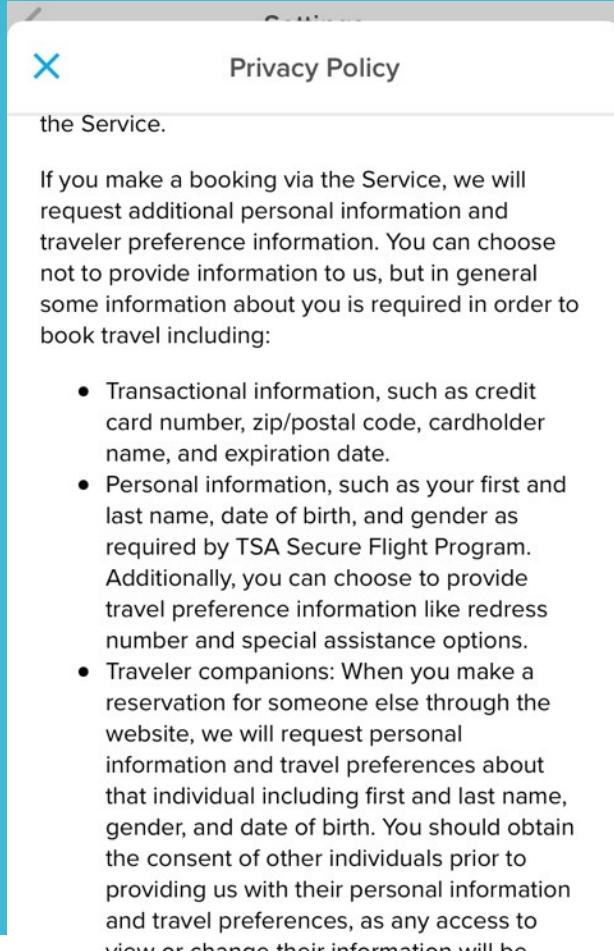
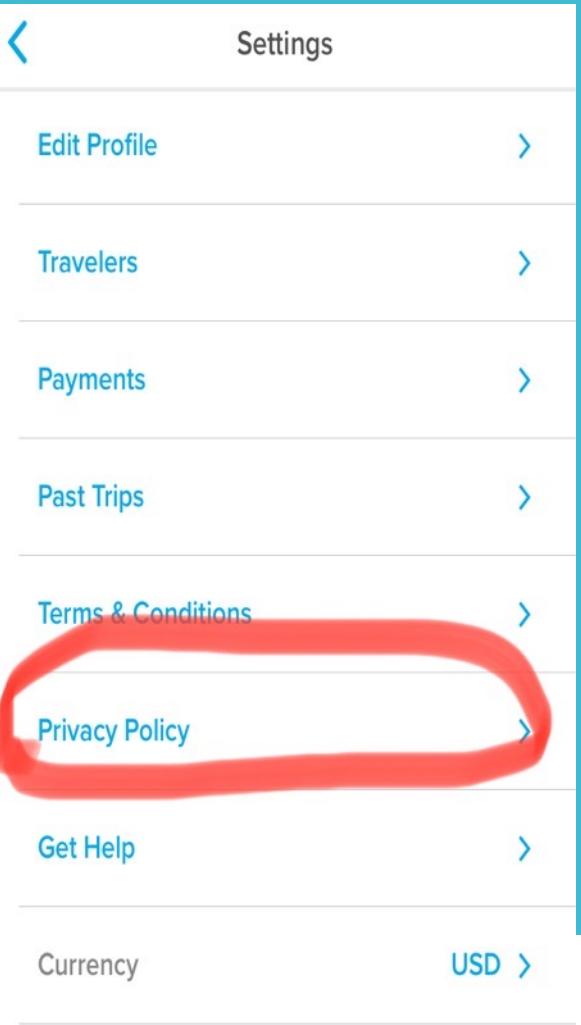
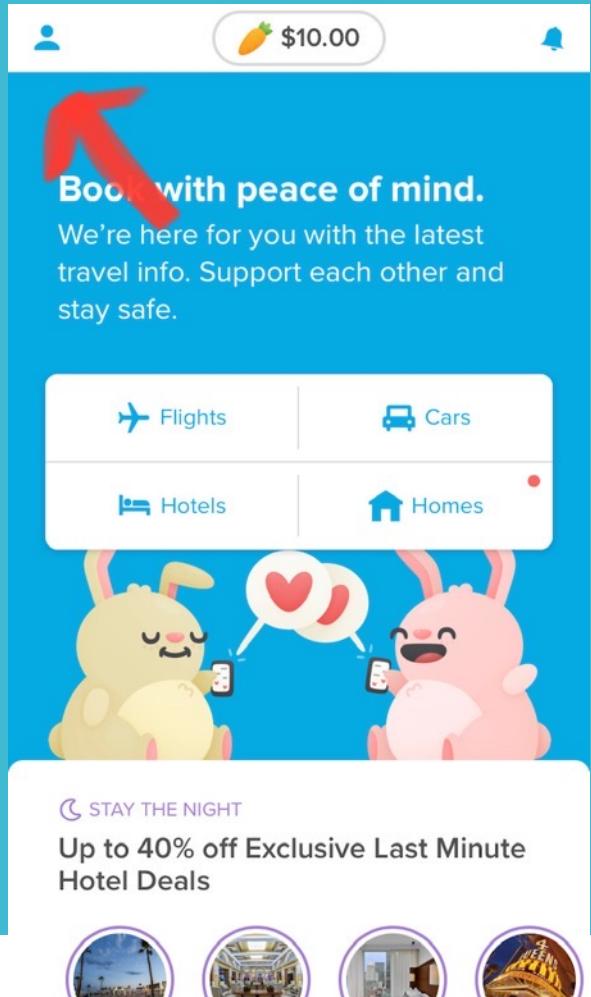
App records phone number, email address, and credit card information for fast log-in and easy booking process

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# Privacy Policy Screenshots:



If you are using Hopper on your mobile device,

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# Privacy Policy Recommendations

add a table of contents allowing users to skip ahead to sections

provide a 1-sentence summary of each paragraph

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# Security Analysis

login with phone number  
(no alternative options)

no password required to open  
app

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# Security Recommendations

allow alternative methods of login  
such as email address or user id.

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# Conclusions

the android version of the app had several functional and usability issues compared to iOS

Hopper must take explicit accountability for protecting PII

both android and ios expose users to risk of theft with their weak log-in credentials

stronger authentication is required

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