PedalPilot

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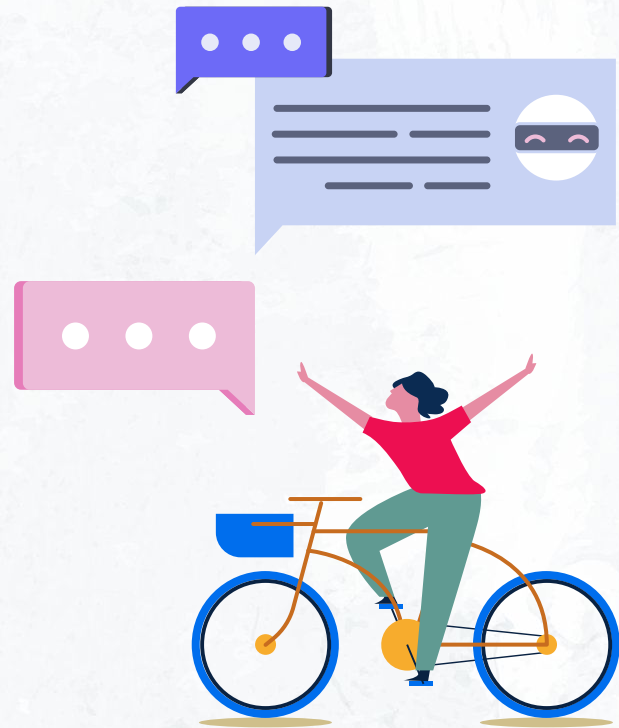
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Needfinding Process

Initial user group

Bike commuters concerned with road safety

Why?

Reduce accidents & enhance public health

Methods

(a) **Interviews: open-mindedness & empathy**

(b) **Learned: user problem**

"I hope to have information on routes with good lighting during the night and avoid

dangerous blocks" - Tong Wang

Customizable routes

(c) **Unknowns**

Focus on safety or route recommendation?

Risks

(a) Current solutions

  e.g. Mellow Map

(b) Testability

  preference → analysis → route recommendation → testing

(c) Solution

  Reflection → focus on only one target group

  Formalize an actionable testing plan

Productive Needfinding Processes

(a) Week 2: Empathy

We listened to interviewees and asked a lot of why questions, instead of asking direct questions and jumping to conclusions

Comparison between current solutions was helpful to see differences and what is missing from all solutions

Piggyback questions yielded results that were unexpected, or otherwise wouldn't have come up → gave us new insights

(b) Week 3: Curiosity

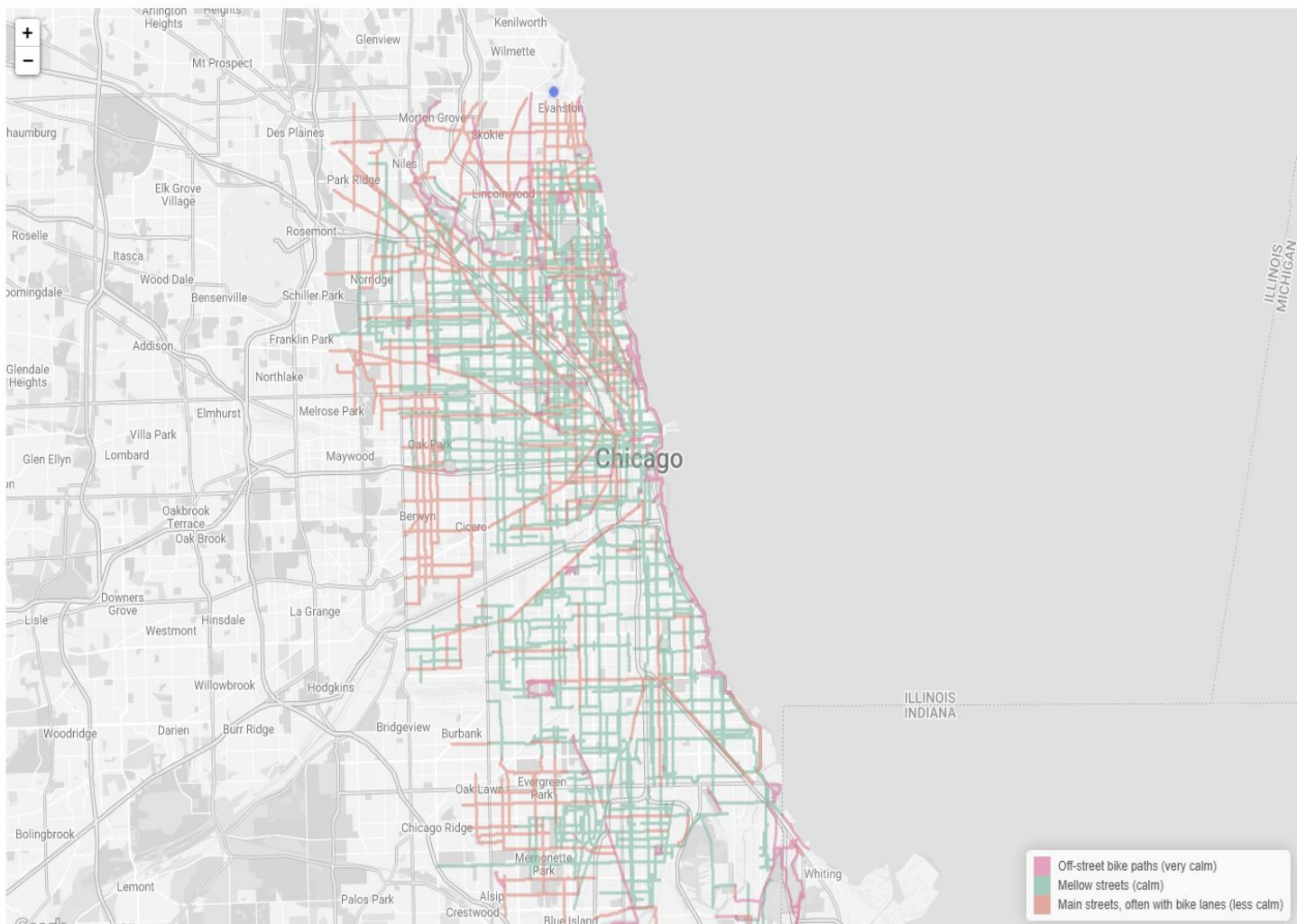Design probe → we had users test an existing solution

Mellow Bike Map — Find safe, chill Chicago bike routes. Like Google Maps if it took you through cozy side streets.

Start address

End address

Search

Reset search

☐ Use v2 routing ⓘ

☐ Enable saved locations ⓘ

∧ Hide search box   ∧ Hide legend

■ Off-street bike paths (very calm)
■ Mellow streets (calm)
■ Main streets, often with bike lanes (less calm)

Hindrances to Understanding

(a) After week 3 testing, we realized that current solutions already address users' issues

Shifted our focus to a different, more specific user class

A lot of interviewees tried to give solutions to their problem instead of going into their problem in more depth

(b) Solutions

Providing additional context of why the interviewer is interviewing, why we need to hear the problem, not a solution

Making conversation more casual

Giving our interviewee a scenario → help identify more needs of the rider

Problem Statement

Tourists want to find a cycling path catered to their location and stop category preferences to a landmark, but can't because no current solution have these features, which is bad because it leaves them confused and lost.

02 →

Design Sprints

Design Argument Development

(a) Desired Outcomes

We want to provide an accessible and straightforward way for amateur bikers to gain access to public e-bikes and sightsee an area in a experiences tailored for them.

(b) Obstacles

Google Maps: too much user-input, no option to create route to hit desired landmark based on distance

Strava: shows popular routes, not routes customized to user preferences

(c) Design Characteristics

Make tourists' life easy and allow them to get the most out of their time in a city, user only search once, and find the routes for multiple places.

Design Argument

It's hard to know what you want to see and where you want to go, we are allowing the user to choose their own experience while giving them a taste of the highlights of Chicago.

What type of ride? *

○ Loop

○ A-to-B (we will end your ride at your last landmark!)

How long would you like to bike for? *

○ Short Distance (1-3 miles)

○ Medium Distance (4-8 miles)

○ Long Distance (8-15 miles)

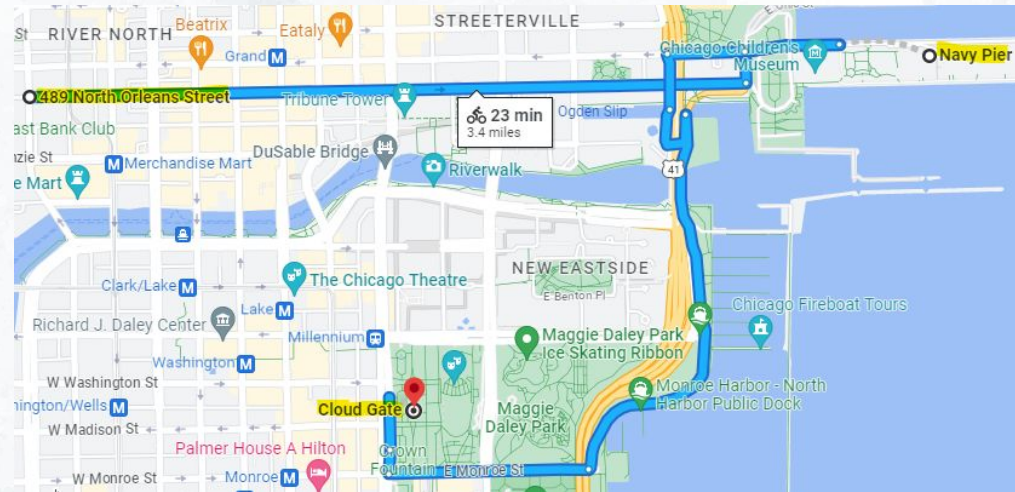## Which landmarks would you like to visit?

○ The Bean (Cloud Gate)

○ CSO

○ Field Museum

○ Navy Pier

PedalPilot

Please wait while we build you a route...

Takeaways

(a) Insights

Focus on tourist need and biking experience - make biking the experience so that it's not just point A to B landmarks

(b) Risks from this point

Can we generate enough routes to fit all of the users needs?

Interface Argument

Our interface will feature simple and familiar design elements so that our user can have a quick, smooth experience receiving a **satisfying** route.

How long would you like to bike for? *

○ Short Distance (1-3 miles)

○ Medium Distance (4-8 miles)

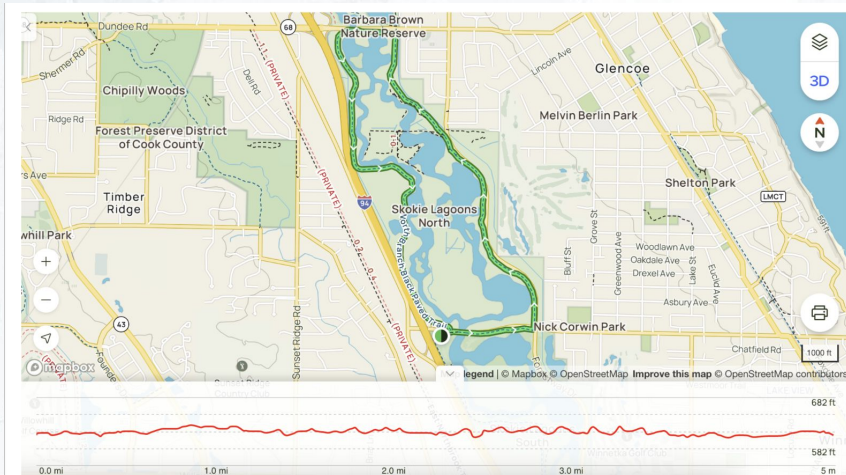○ Long Distance (8-15 miles)

What sort of trail do you prefer? *

○ Urban

○ Nature

○ Suburban

Where in the city do you want to explore? *

○ North Shore

○ South Side

○ The Loop

○ Lincoln Park/Old Town

North Branch Trail: Skokie Lagoons

Discover this 4.5 mile loop trail through the Skokie Lagoons in Skokie, Illinois. This trail is fully paved with a total elevation gain of 85 ft. This ride features nice views of the lagoons and wooded areas, as well as, the chance to see local wildlife like deer and turtles. There are 8 access points to the trail off the paved parking lot near Tower Road.

Interface Argument Development

(a) Obstacles

Strava: no "route fit"

Old prototype: focused on landmarks, but where are the landmarks?

(c) Takeaways

Show don't tell (I/O)

(b) Design Characteristics

Make the user-input/output simple and easy to understand.

Generate "best fit route" based on desired characteristics.

(Show the tourist details and pictures of the route.)

System Model

Our system will index a database of routes vis-a-vis the user's preferences in an attempt to find a route which best fits the the users' preferences.

Tester acting as a bridge between user and database
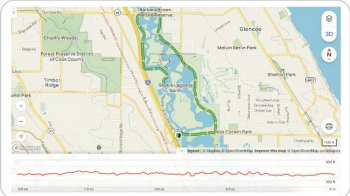
User Responses

	A	B	C	D	E	F	G
1	Timestamp	Score	What type of ride?	How long would you like	What sort of trail do you p	Email Address	Where in the city do you
2	5/14/2023 16:26:10		Loop	Short Distance (1-3 miles	Urban	natesowder2023@u.nort	Northside
3	5/16/2023 15:09:41		Loop	Long Distance (8-15 mile	Urban	brahmiec@gmail.com	The Loop
4	5/16/2023 22:09:38		A-to-B (we will end your	Medium Distance (4-8 mi	Nature	stevengu2024@u.northw	The Loop
5	5/16/2023 22:16:15		Loop	Medium Distance (4-8 mi	Urban	stevengu2024@u.northw	The Loop
6	5/21/2023 23:54:31		A-to-B (we will end your	Short Distance (1-3 miles	Urban	stevengu2024@u.northw	North Shore

Route Database

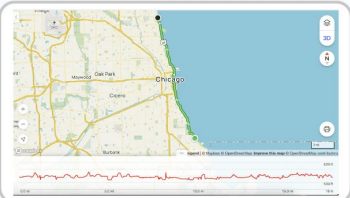| Name	Type	Distance	Density	Region
Hyde Park, Kenwood, and South Shore Neighborhoods Biking Tour	A-B	5.3	Suburban/Nature	Southside
Bloomingdale Trail (The 606)	Loop	5.5	Suburban/Urban	Northside
Waterfall Glen Trail	Loop	9.3	Suburban/Nature	Northside
Lakeshore Path: North Ave Beach To Navy Pier	A-B	1.8	Suburban/Urban	Westside/Southside
Chicago Riverwalk to Grant Park	A-B	4.9	Urban/Nature	Central

Corresponding Route Data

North Branch Trail: Red, Black, and Blue Sections

Enjoy this 19.9 mile point-to-point trail through Glencoe, Illinois. This ride features 314 ft of elevation change, and ventures through many forest preserves of Cook County. This route goes through part of the Chicago Botanic Garden Trail, Black Trail, and Red Trail. The Blue Trail is partially unpaved, and there is the opportunity to take breaks at benches and picnic trails along the route.

Hyde Park, Kenwood, and South Shore Neighborhoods Biking Tour

Try this 5.3-mile trail near Chicago, Illinois features a trip through the neighborhood and near the home in which President Obama grew up in, a nickel tour through the University of Chicago Campus, and a scenic section through Jackson Park.

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Takeaways

(a) Insights

Computationally Expensive for tester

Capitalize User Customizability

(c) Risks from this point

How would we transition from a human-drive proof-of-concept prototype to a fully automatic scalable prototype?

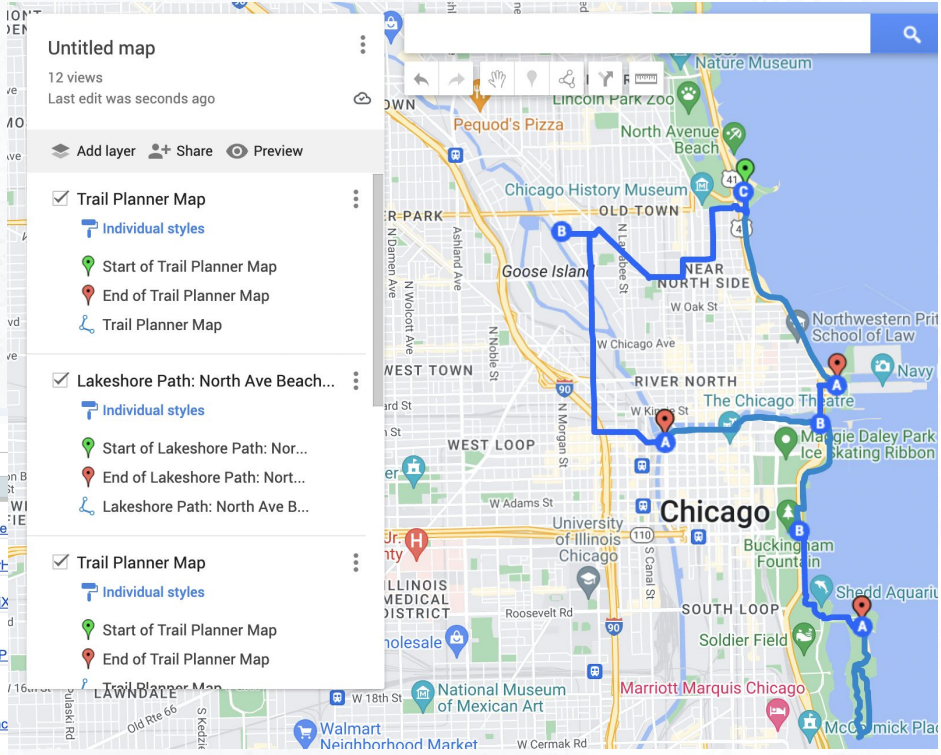How do we create more routes without doing more work?

(b) Updated system argument

Use a database of subroutes that the tester can concatenate together to create a route that better fits the user's needs
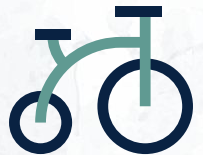
Concatenation via My Maps

Untitled map
12 views
Last edit was seconds ago

Add layer   Share   Preview

☑ Trail Planner Map
  Individual styles
  Start of Trail Planner Map
  End of Trail Planner Map
  Trail Planner Map

☑ Lakeshore Path: North Ave Beach...
  Individual styles
  Start of Lakeshore Path: Nor...
  End of Lakeshore Path: Nort...
  Lakeshore Path: North Ave B...

☑ Trail Planner Map
  Individual styles
  Start of Trail Planner Map
  End of Trail Planner Map
  Trail Planner Map

Subroute Database

	A	B	C	D	E	F	G
	Route Title	Distance	Type of Trail	Loop or A-B?	Part of City	Actual Numerical Distance (Miles)	.gpx files
2	Lincoln Park Trail	Mediu...	Urban	Loop	Lincol...	5	vnWsS4twAxvE7Zl8ygzP-4e
3	Bloomingdale Trail (The 606)	Mediu...	Urban	Loop	North ...	5.5	1QlqksNlZOAi9f19fCf3xtBArh-
4	Waterfall Glen Trail	Long ...	Subur...	Loop	North ...	9.3	l3iqx0luZEmn-lctbWbOztDcjX
5	North Branch: Skokie Lagoons	Mediu...	Nature	Loop	North ...	4.5	l2Tpvmev6hBEQvNhN8ce_P
6	North Branch Trail: Red, Black, and Blue Sections	Long ...	Nature	A-B	North ...	19.9	_jXScuNUIL632isJ5iNNmvmc
7	Old Town to Wicker Park	Short ...	Urban	A-B	North ...	3	YvvNEUIW1E6VCJ-ifZyeo9C
8	312 Riverrun Path	Short ...	Urban	A-B	North ...	2.9	zMTEktgNrrgr8yBtOVRkWRx
9	Magnificent Mile and Navy Pier	Mediu...	Urban	A-B	North ...	4.2	https://drive.google.com/file/c
10	Hyde Park, Kenwood, and South Shore Neighborhoods Biking Tour	Mediu...	Subur...	A-B	South ...	5.3	6Uhv_ZwLAtoQuteziS4ngnEv
	Henry C.						

L10   fx

03 →

Next Steps

Future Plans

(a) Fully Automated Route Planning

Update the System Argument to fully eliminate the manual route planning we currently are working with

(b) Update Interface Argument

Detailed description and interactive map, give more information to a tourist who wouldn't know anything about Chicago

(c) What is still hard?

Clarifying what user can expect, making sure we generate a best fit route