

Hike with a **view**

Tatiana Konstantinova



Hiking in the USA

45M hike each year

“Observing scenic beauty”
in top 5 reasons
for getting outdoors



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~ 2500 trails in NY
Which one will please your eye?

Current solution for trail selection



Help

Sort By ▾

Difficulty ▾

Length ▾

Rating ▾

What To Do ▾

What To See ▾

Suitability ▾

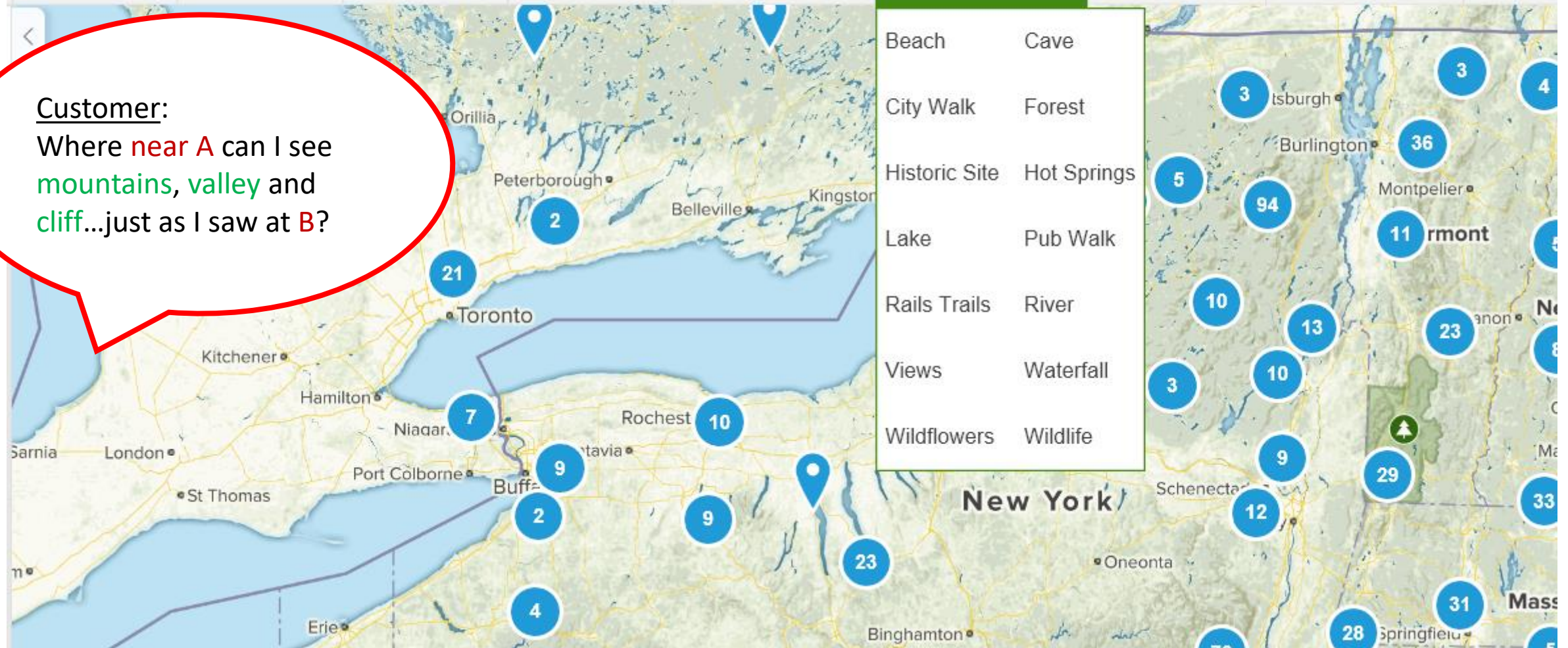
Route Type ▾

Trail T

Customer:

Where **near A** can I see
mountains, valley and
cliff...just as I saw at **B**?

Beach	Cave
City Walk	Forest
Historic Site	Hot Springs
Lake	Pub Walk
Rails Trails	River
Views	Waterfall
Wildflowers	Wildlife



My approach

Data



My approach

Data

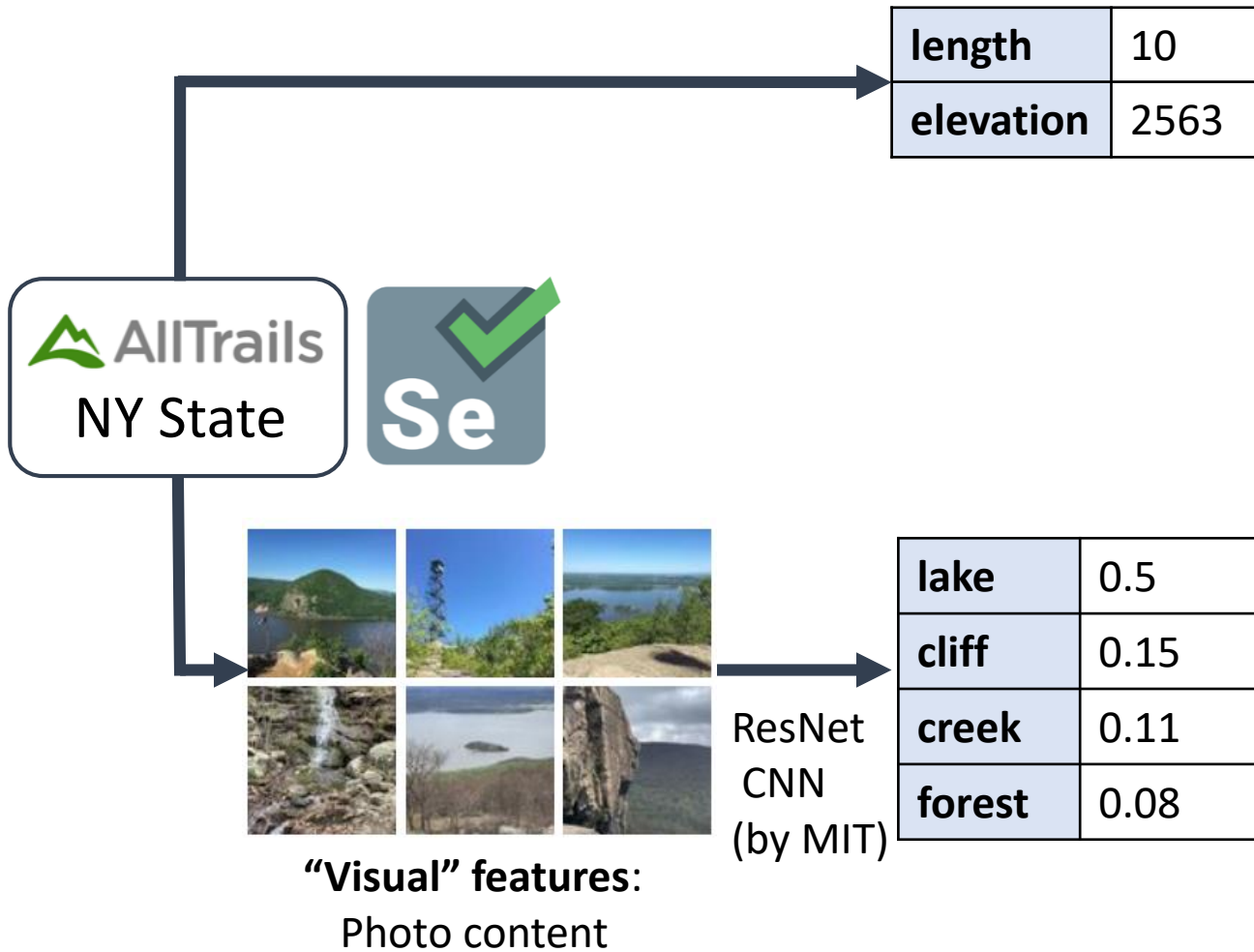
Feature Engineering



My approach

Data

Feature Engineering

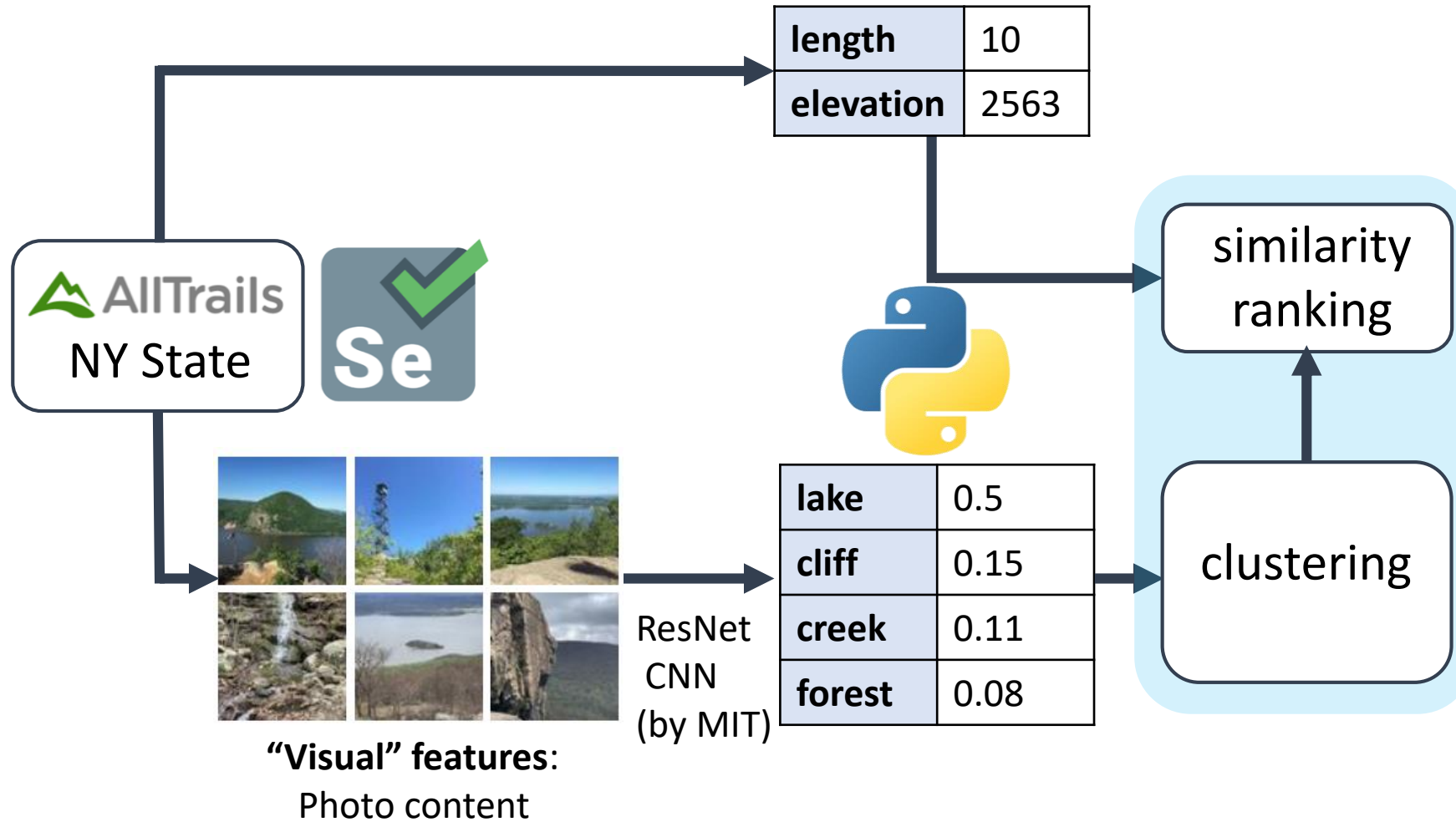


My approach

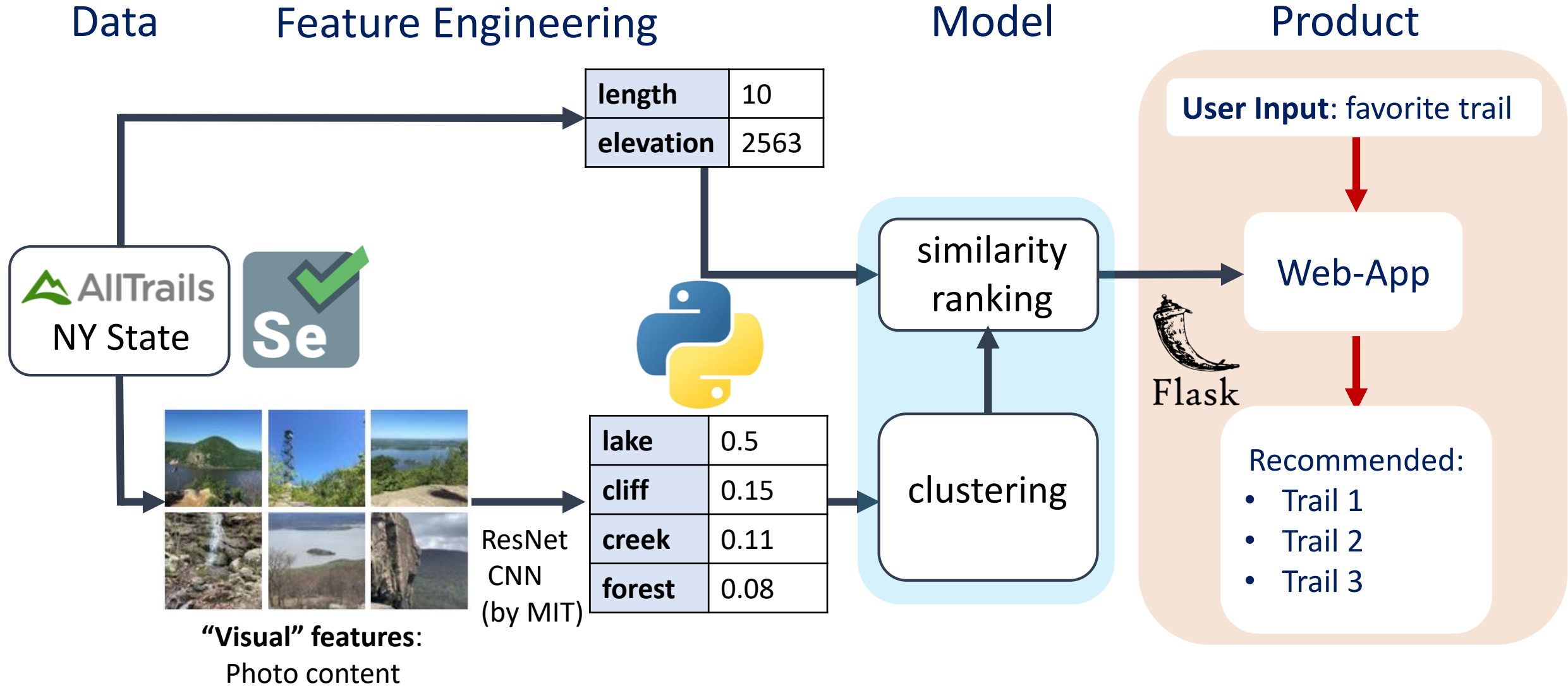
Data

Feature Engineering

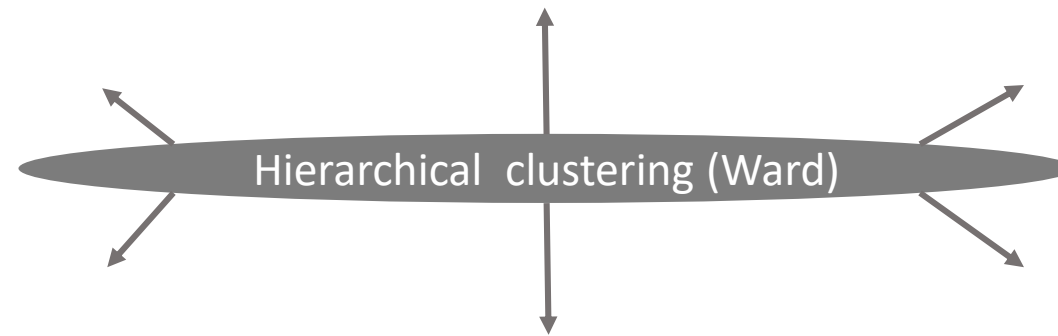
Model



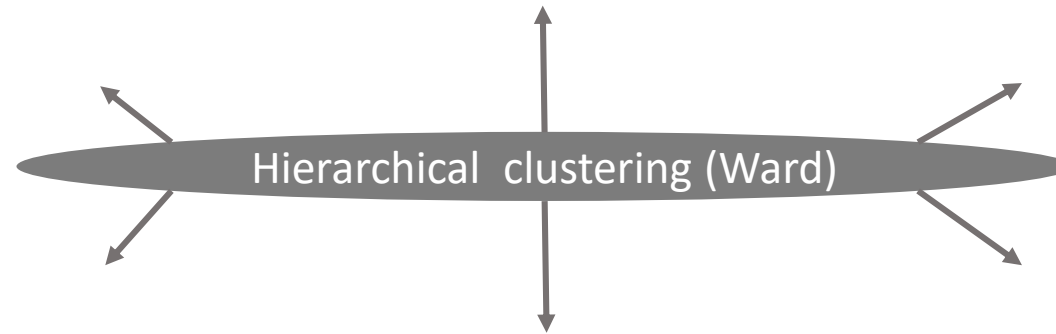
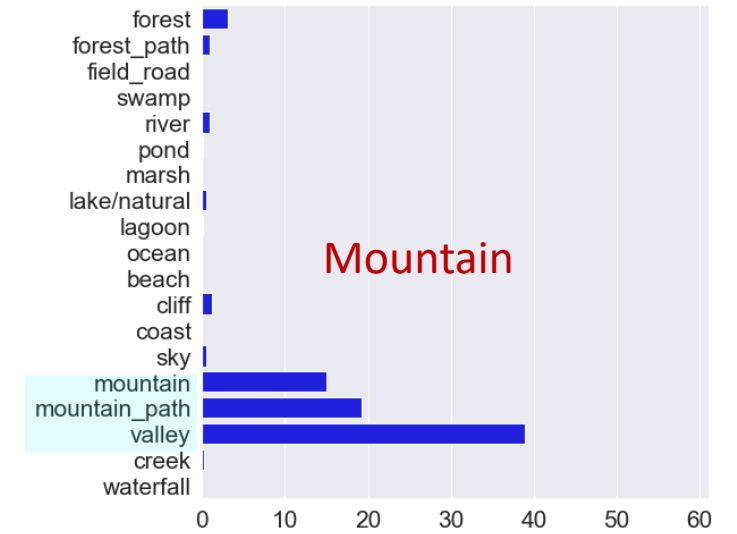
My approach



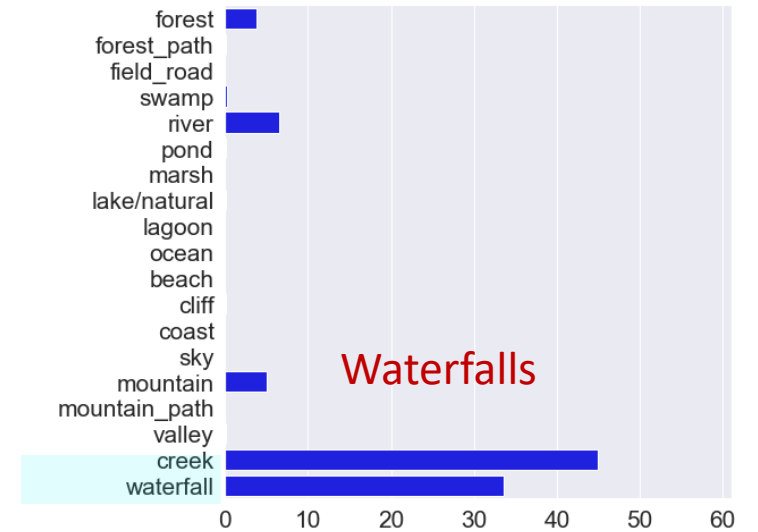
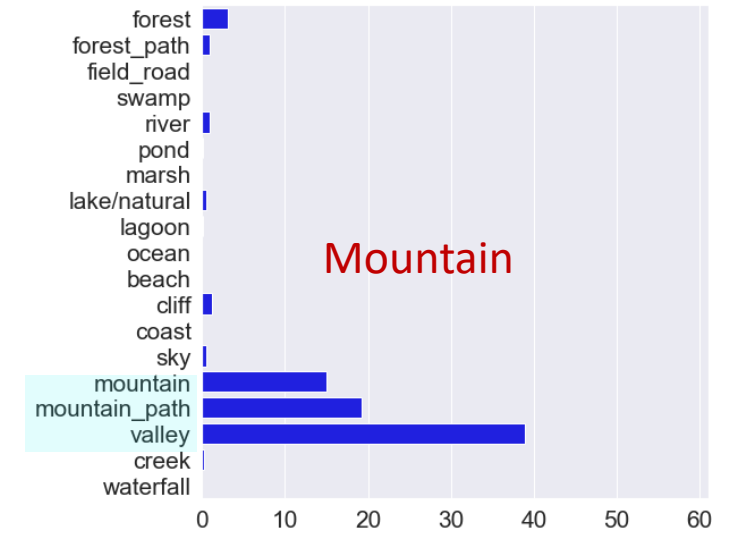
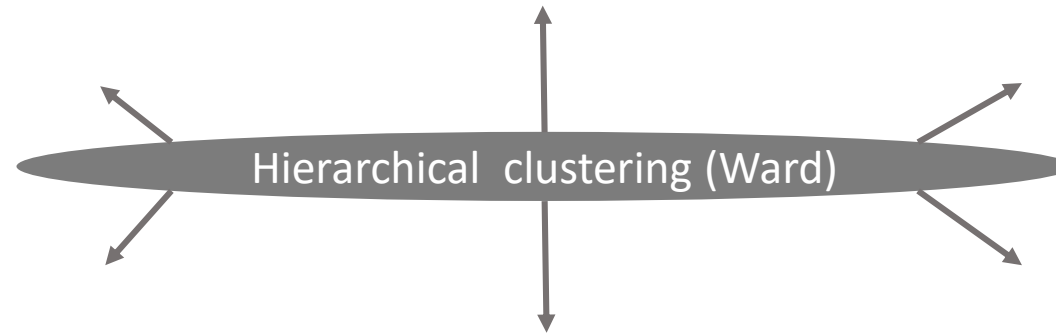
Trails Views Groups



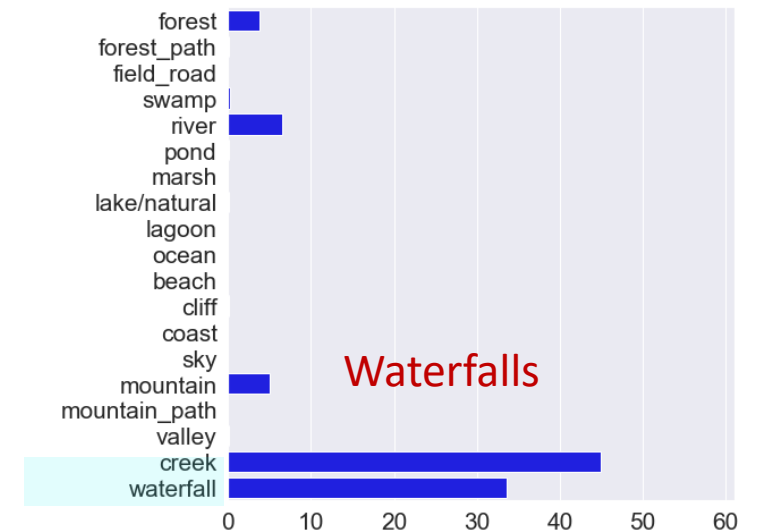
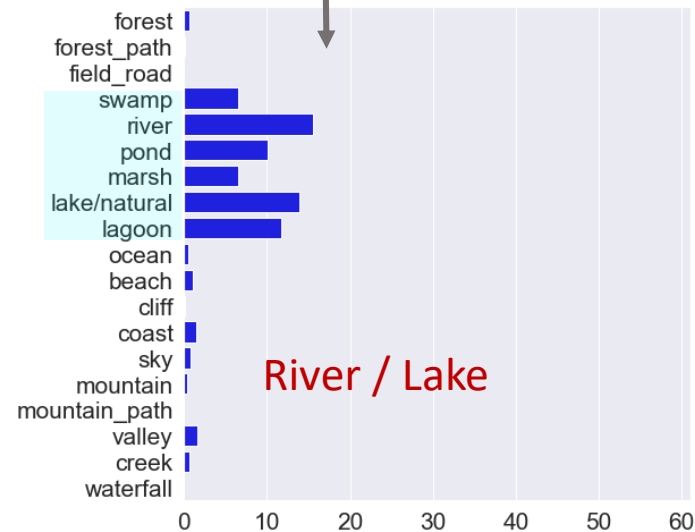
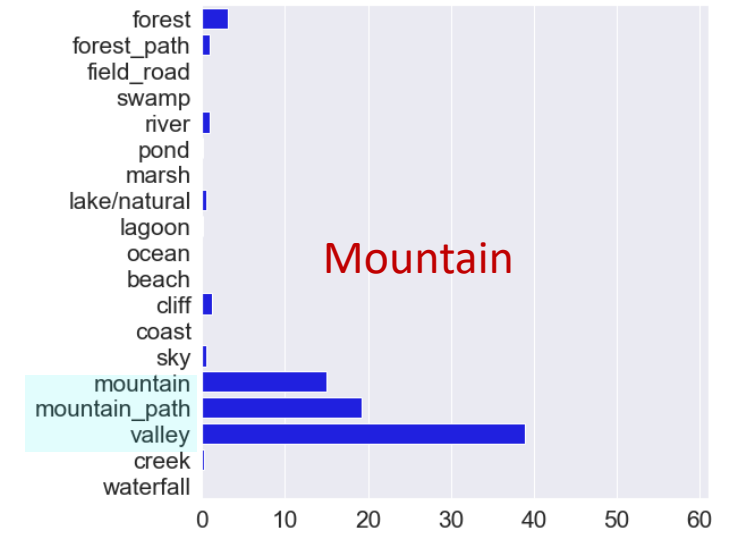
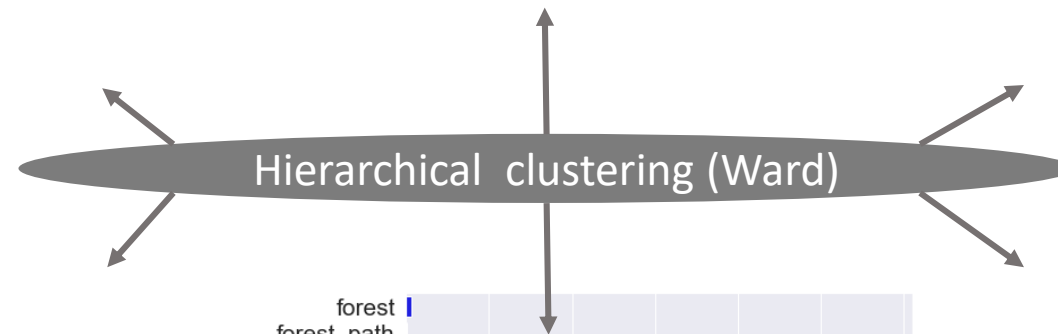
Trails Views Groups



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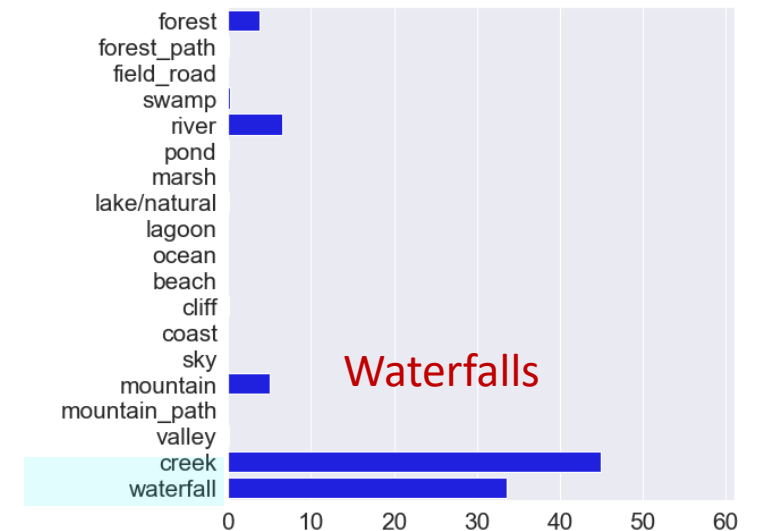
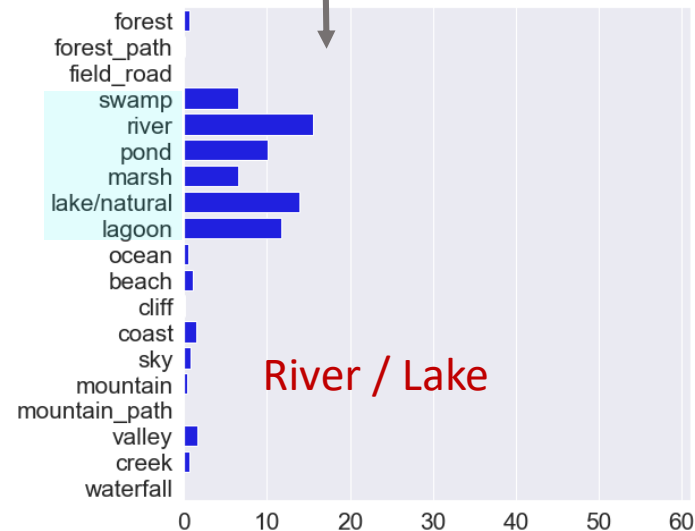
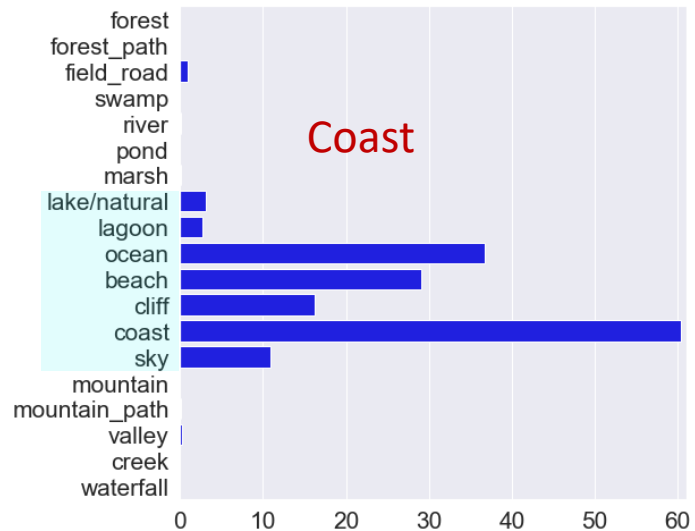
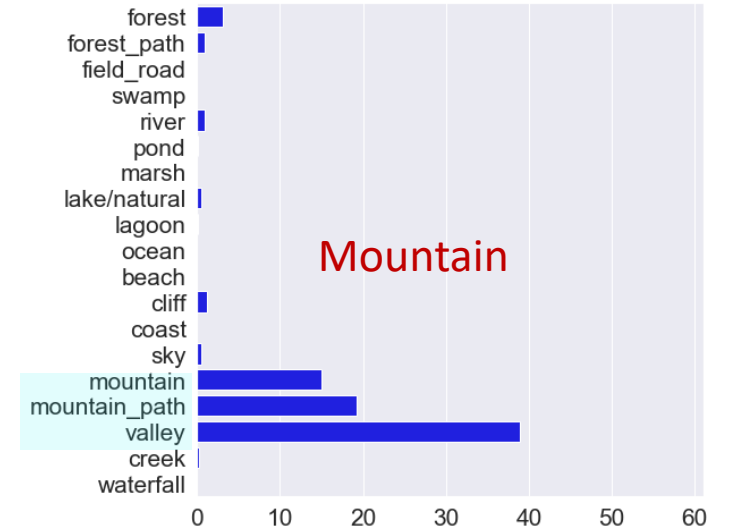


Trails Views Groups

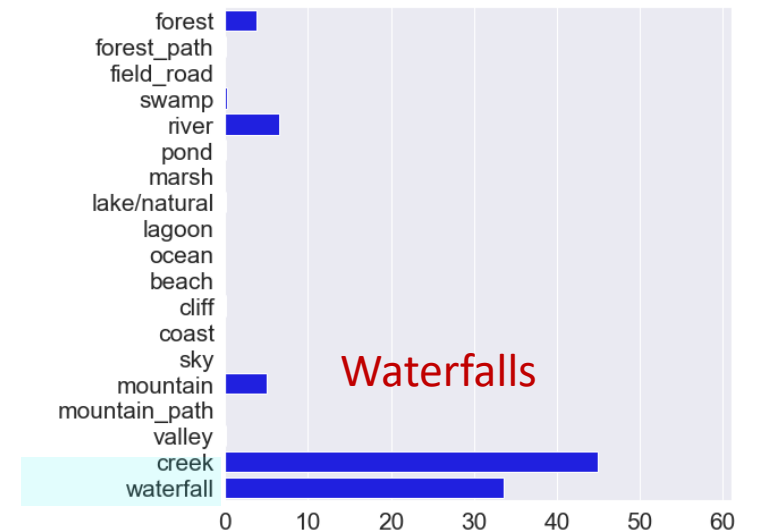
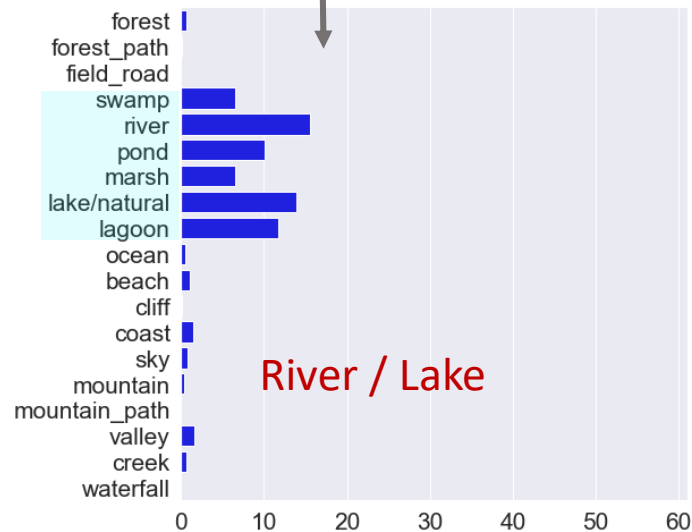
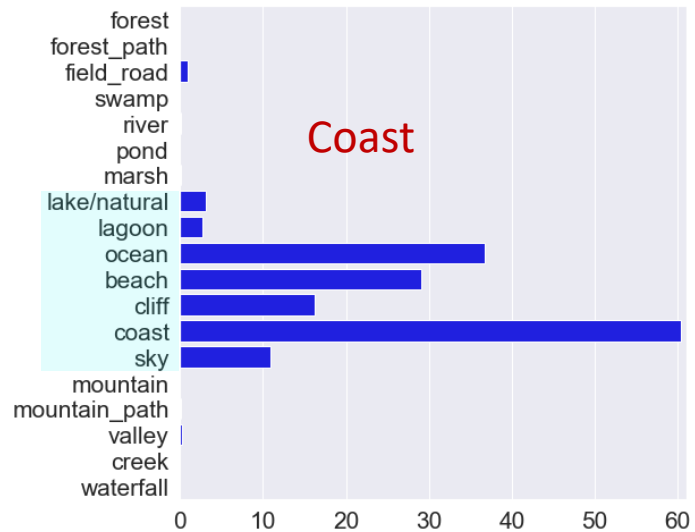
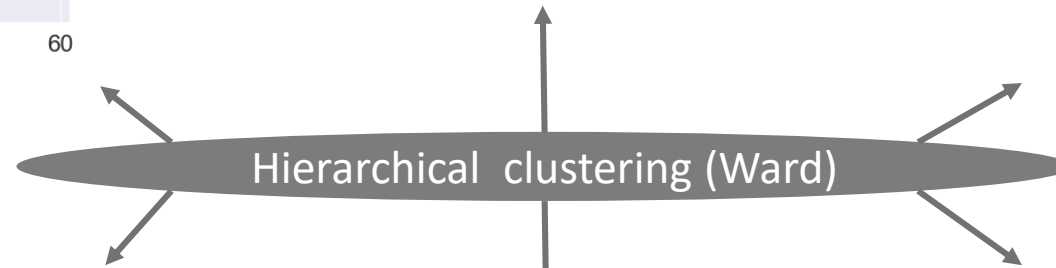
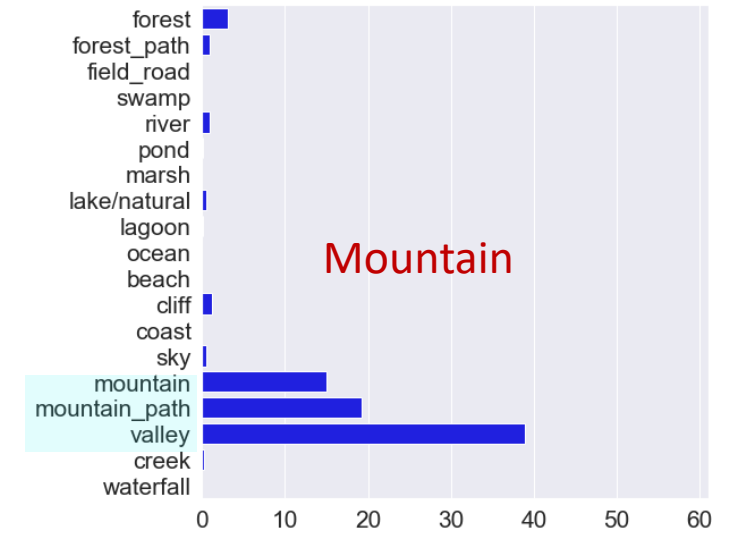
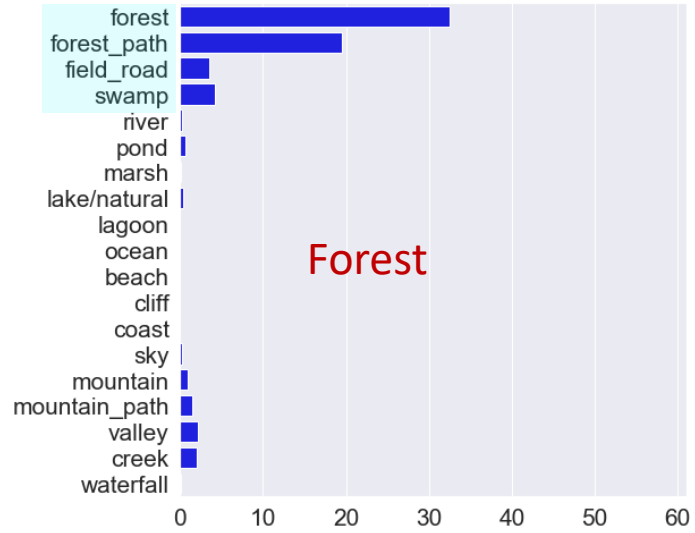


Trails Views Groups

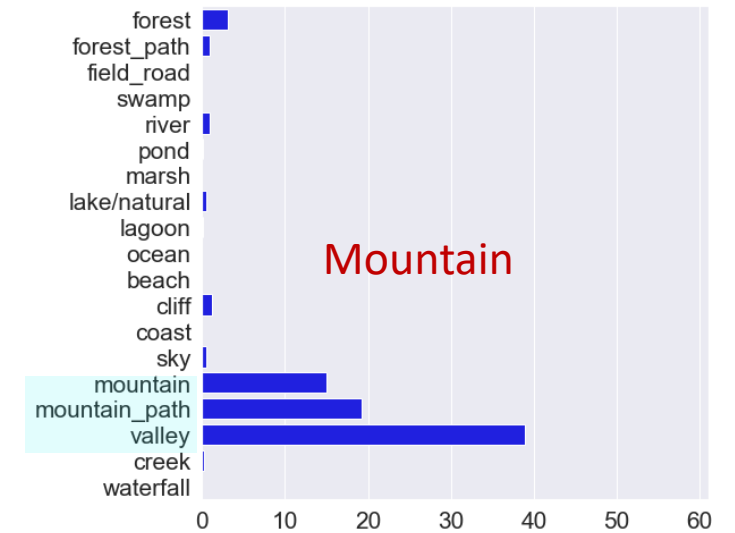
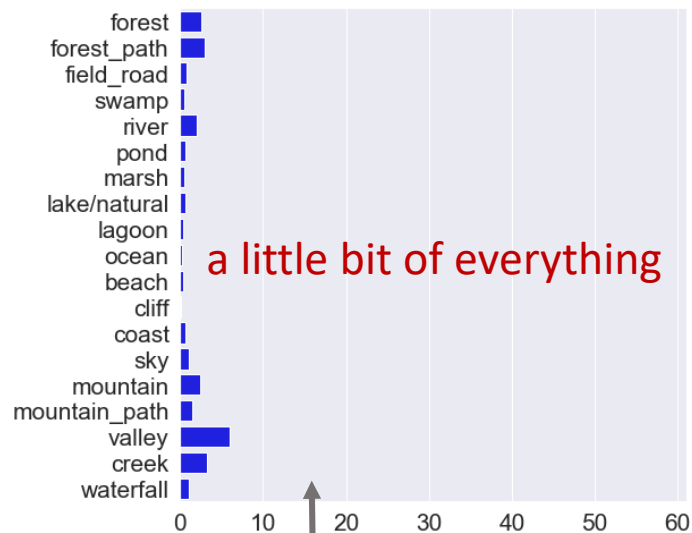
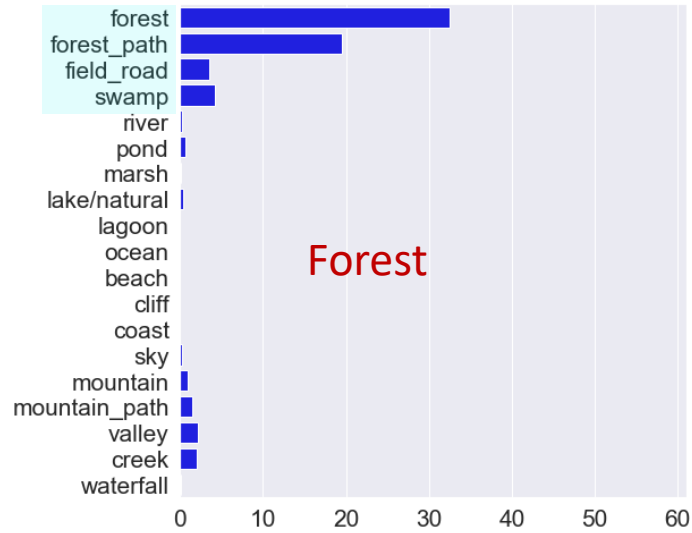
Hierarchical clustering (Ward)



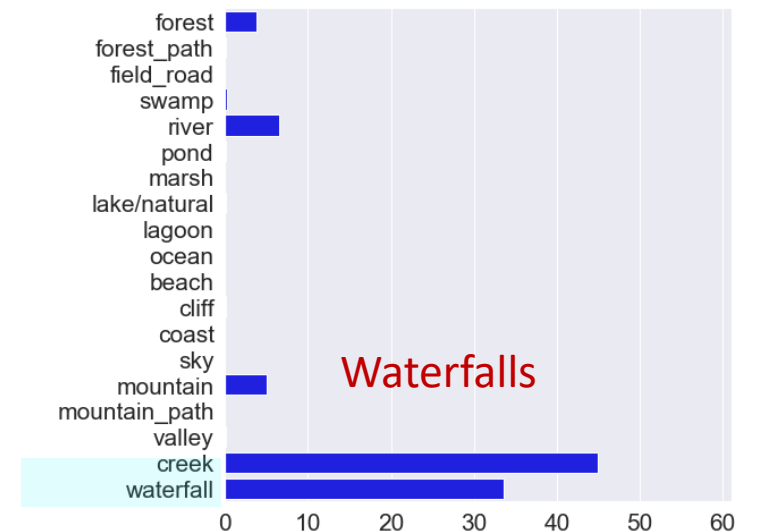
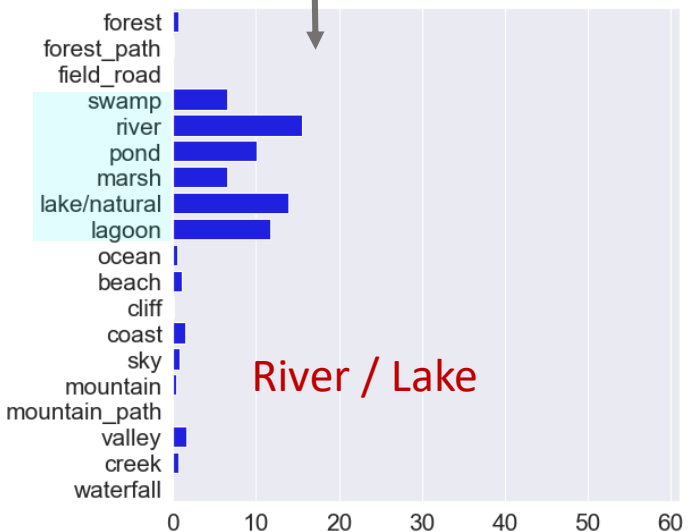
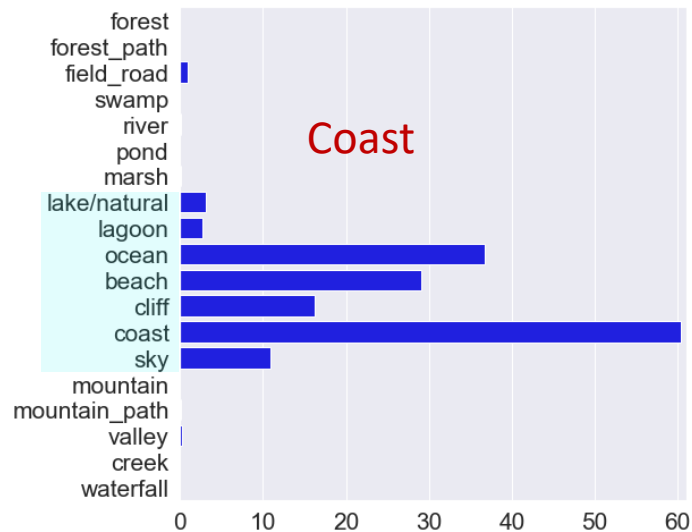
Trails Views Groups



Trails Views Groups



Hierarchical clustering (Ward)



Web App

[demo webpage](#)

Search for trails with views

Find a trail like

Mount Arab Trail

Look for trail in the next area

43

-73

50

Search

Mount Arab Trail

valley

mountain

young_forest

forest

Recommended for you

Western Ridge Trail to Overlook

Very Similar

valley

pond

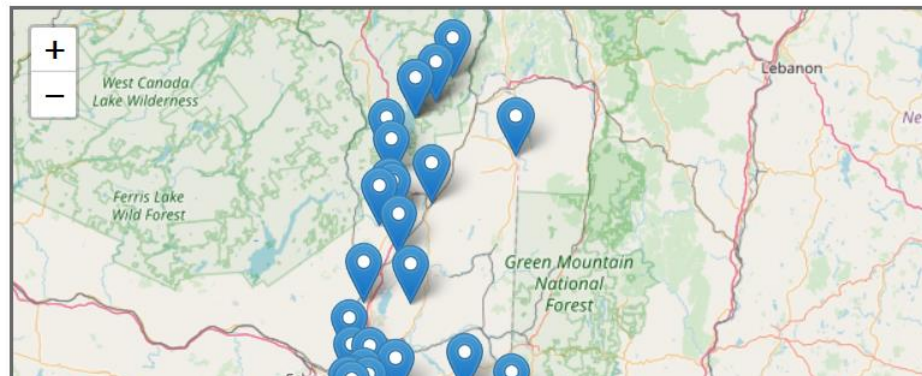
watering_hole

marsh

mountain

Pilot Knob Trail

Very Similar



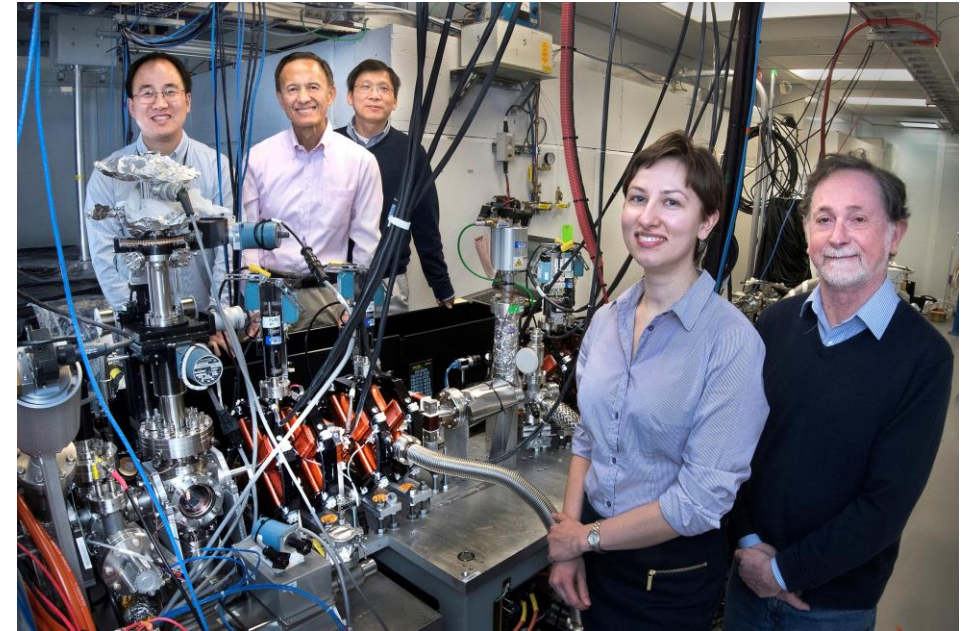
About Tatiana Konstantinova



BS, MS :
Appl Math and Appl Physics



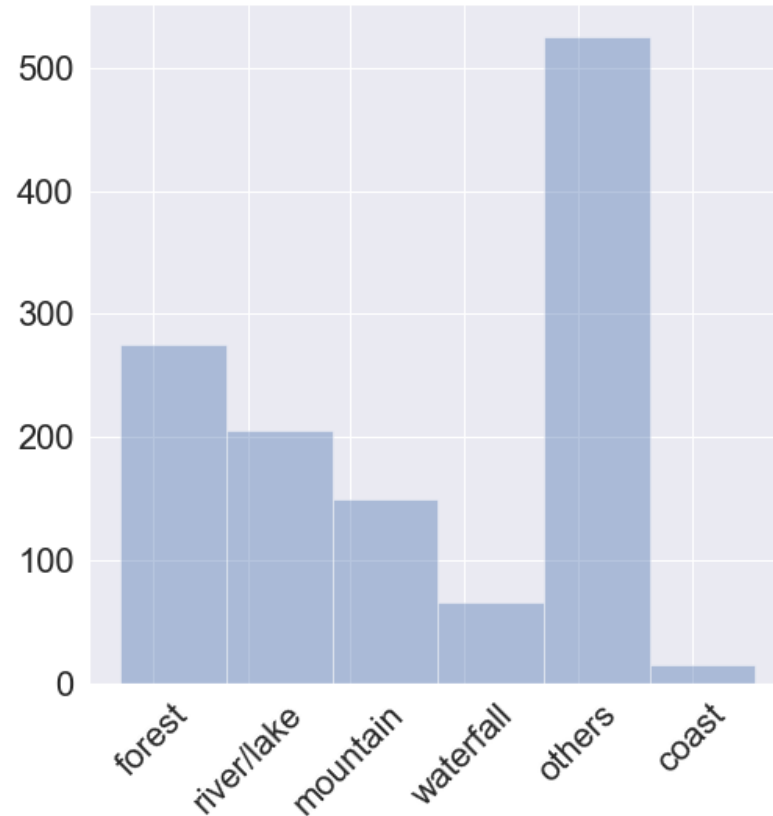
PhD: Physics



Hierarchical Clustering



- ☐ Centered around certain theme
- ☐ Include “ocean” theme (1%)
- ☐ Do not depend on random assignment



Visual Features

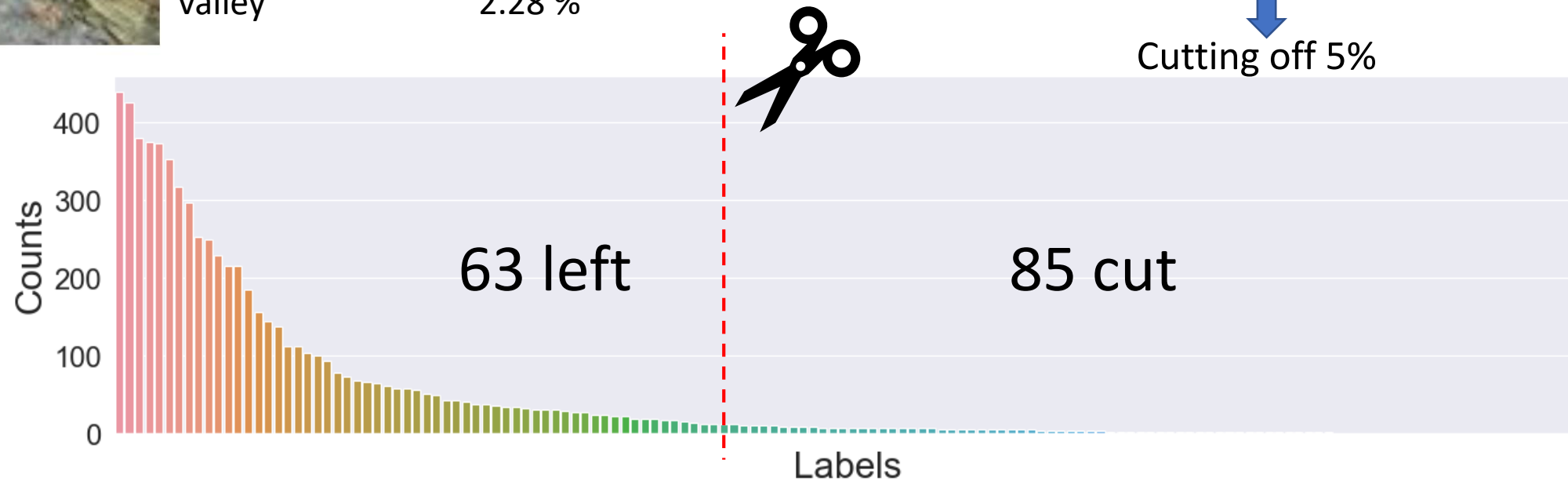


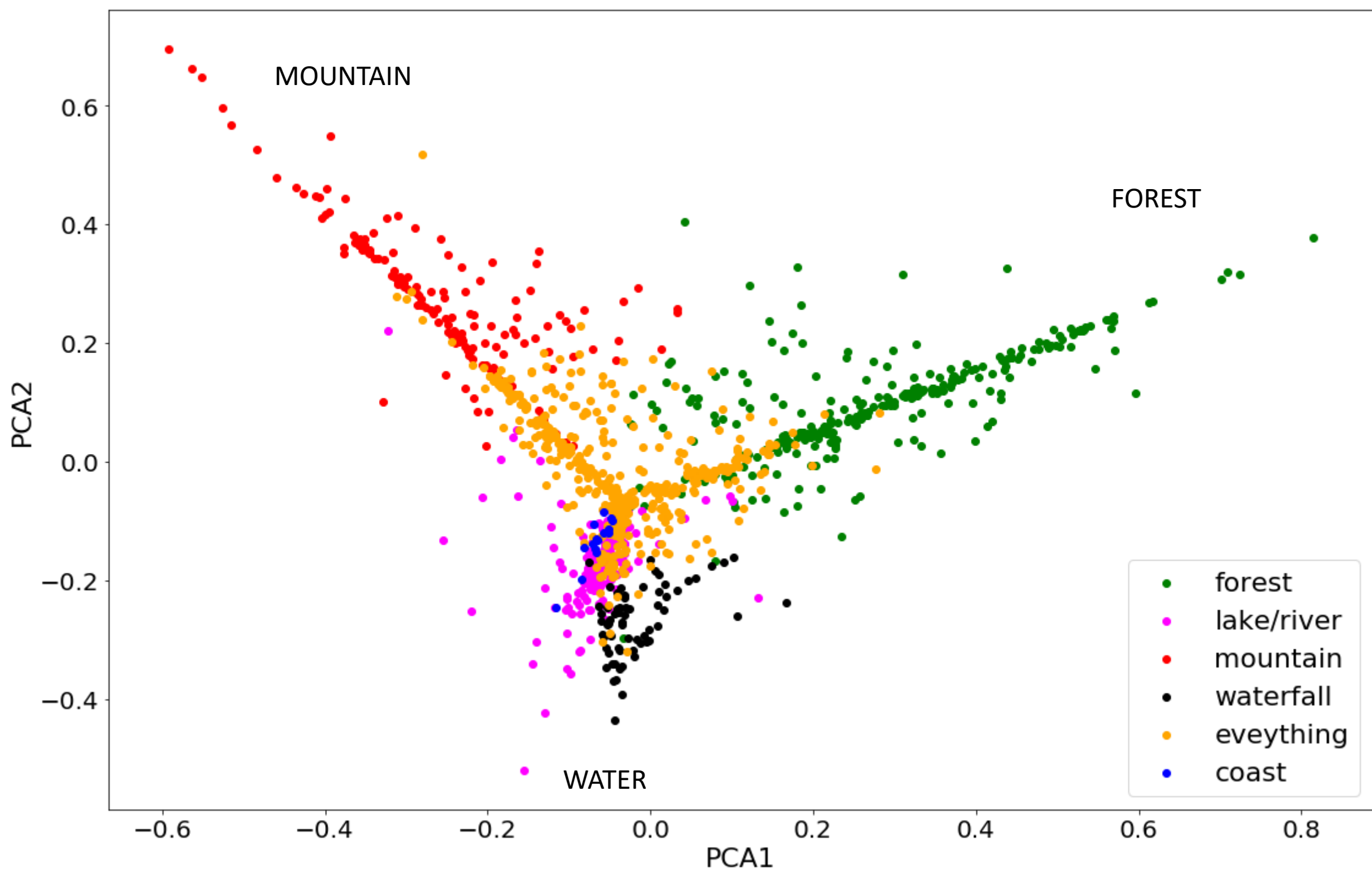
Labels	Probability
creek	41.09 %
river	15.60 %
swimming hole	8.77 %
hot spring	7.37 %
dam	6.09 %
raft	4.25 %
valley	2.28 %

→ Average within the trail

↓
Select top 5 for every trail

↓
Cutting off 5%





tagged by alltrails.com

Clusters from photo labels

	forest	beach	river	lake	waterfall
Forest	81 (%)	2	18	19	11
Mountain	88	1	20	24	17
Coast	33	73	7	27	0
River/Lake	68	7	22	58	11
Waterfall	76	0	47	9	85
A bit of everything	76	6	26	28	18

Outliers


Long Path Through Hike


HARD


★★★★★


3 reviews

New York City, New York


Favorite


Directions


Print/PDF Map

Send to Phone

Long Path Through Hike is a 424 mile moderately trafficked point-to-point trail located near New York City, New York that features a great forest setting and is rated as difficult. The trail is primarily used for hiking, walking, nature trips, and bird watching and is best used from April until September. [Show Less](#)

 **Distance:**
424.0 miles

 **Elevation Gain:**
68,077 feet

 **Route Type:**
Point to Point

hiking

nature trips

bird watching

forest

views

K-means clustering

