Meet The Team

Sumer Kohli

Technical Lead

Neelesh Ramachandran

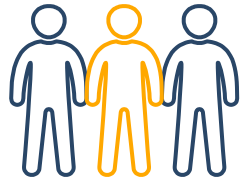Business Strategist, PM

Valerie Yip

Market Researcher

Problem

Social isolation in older adults is a prevalent and growing public health issue

60% of older adults have no social network outside of the home to help them improvise solutions to life issues
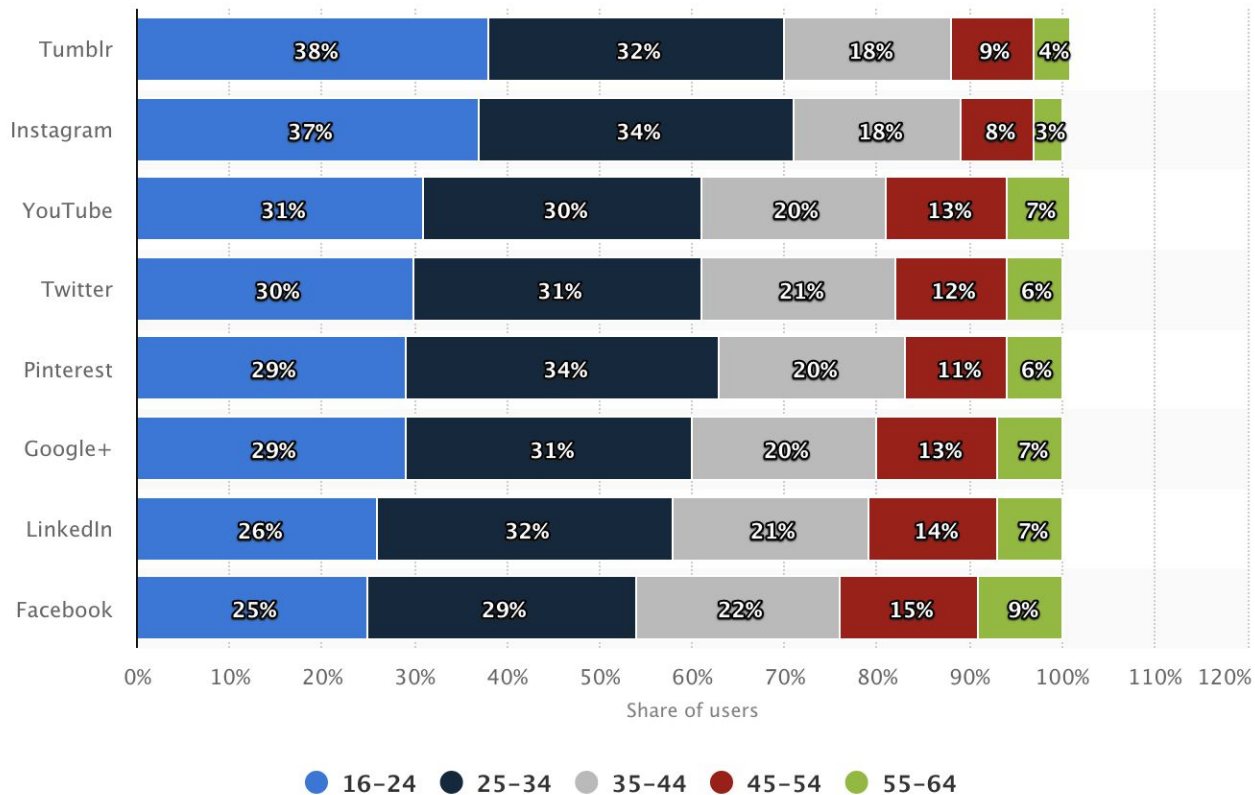
Design On Aging: Independent Living

1 in 3 older adults are lonely

University of Michigan National Poll on Healthy Aging

Social isolation impacts older adults' memory, physical well-being, mental health, and life expectancy

Age distribution of active social media users worldwide as of 3rd quarter 2014, by platform

Platform	16–24	25–34	35–44	45–54	55–64
Tumblr	38%	32%	18%	9%	4%
Instagram	37%	34%	18%	8%	3%
YouTube	31%	30%	20%	13%	7%
Twitter	30%	31%	21%	12%	6%
Pinterest	29%	34%	20%	11%	6%
Google+	29%	31%	20%	13%	7%
LinkedIn	26%	32%	21%	14%	7%
Facebook	25%	29%	22%	15%	9%

Share of users

Legend: 16–24, 25–34, 35–44, 45–54, 55–64

https://www.statista.com

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Market & Consumer

Target: Baby Boomers

Born between 1946 - 1964 (80 million)

ages 55 - 73

- Lots of **disposable income**

  - $7.6 trillion annual economic activity

  - 80% of all luxury travel spending

- Actively **online** (68% of baby boomers)

  - #1 group in social media in terms of engagement

  - 4 out of 5 belong to at least one social media site

  - 27 hours per week online

Our Solution

straightforward **location & personality based** matches

A no-frills approach to social media

- straightforward
- low learning curve
- network effect
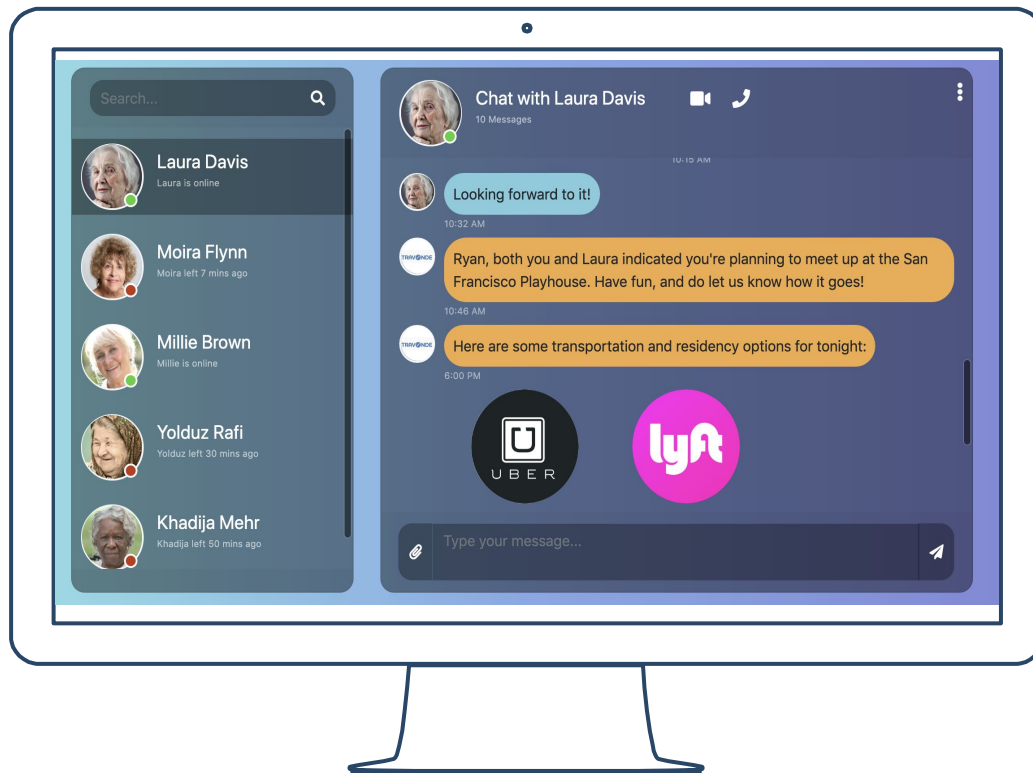 - the more users, the better our algorithm works

Fill out profile

Algorithm matches users

Meet up!

DEMO

Data Collected: Personality

Slider-based: scale of 1 to 5

Collect quantitative data with ease

Reduced surveying time

Data Collected: Mobility

Availability of transportation

Location-based compatibility

Preferred & accessible activities

Data Collected: Personal Info

Minimal info collection for functionality

Strong privacy guarantees

Per-question justification

Technical Details

1. **Minimizes** runtime

2. **Optimizes** for scalability

3. **Enhances** configurability

Matching Algorithm

We detail the matching algorithm as follows. Consider the set of features $\mathbb{F}$ from arbitrary users U and V. We compute the similarity metric as follows, summing over all features:

$$S(U, V) := \sum_{\mathbb{F}} W_F \left(U_F - V_F \right)^2 \qquad (1)$$

where W_F represents the weight of feature F, similar to a weighted mean-square-error (MSE) in statistics. For this metric, lower scores correspond to more similar users, so we simply select the most similar user V to any given user U as follows:

$$V := \underset{W \in \mathbb{U}}{\arg\min} \, S(U, W) \qquad (2)$$

where $\mathbb{U}$ represents the set of users distinct from U and within a certain distance threshold β of U.

The distance threshold β and set of weights $\mathbb{W}$ are entirely configurable, and the algorithm is trivially parallelizable over the set of users.

For further efficiency gains, the similarity metrics can be precomputed when new profiles are registered, and need only be updated when profiles change.

Algorithmic Guarantees

N	10^1	10^2	10^3	10^4
$\overline{\epsilon}$	24.200	10.840	4.910	2.278

For equally-weighted preferences over a uniform distribution.

N denotes number of users.

$\overline{\epsilon}$ represents average match error.

Strong network effect

Fast convergence
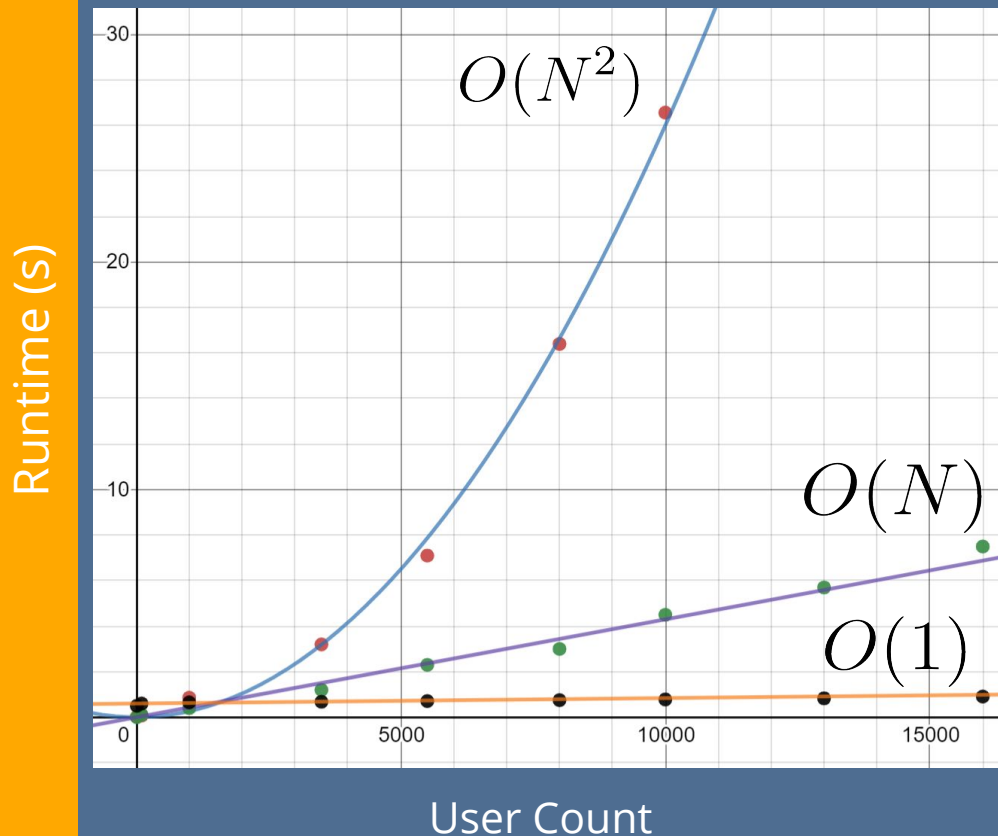
Monotonically improving

Performance & Scalability

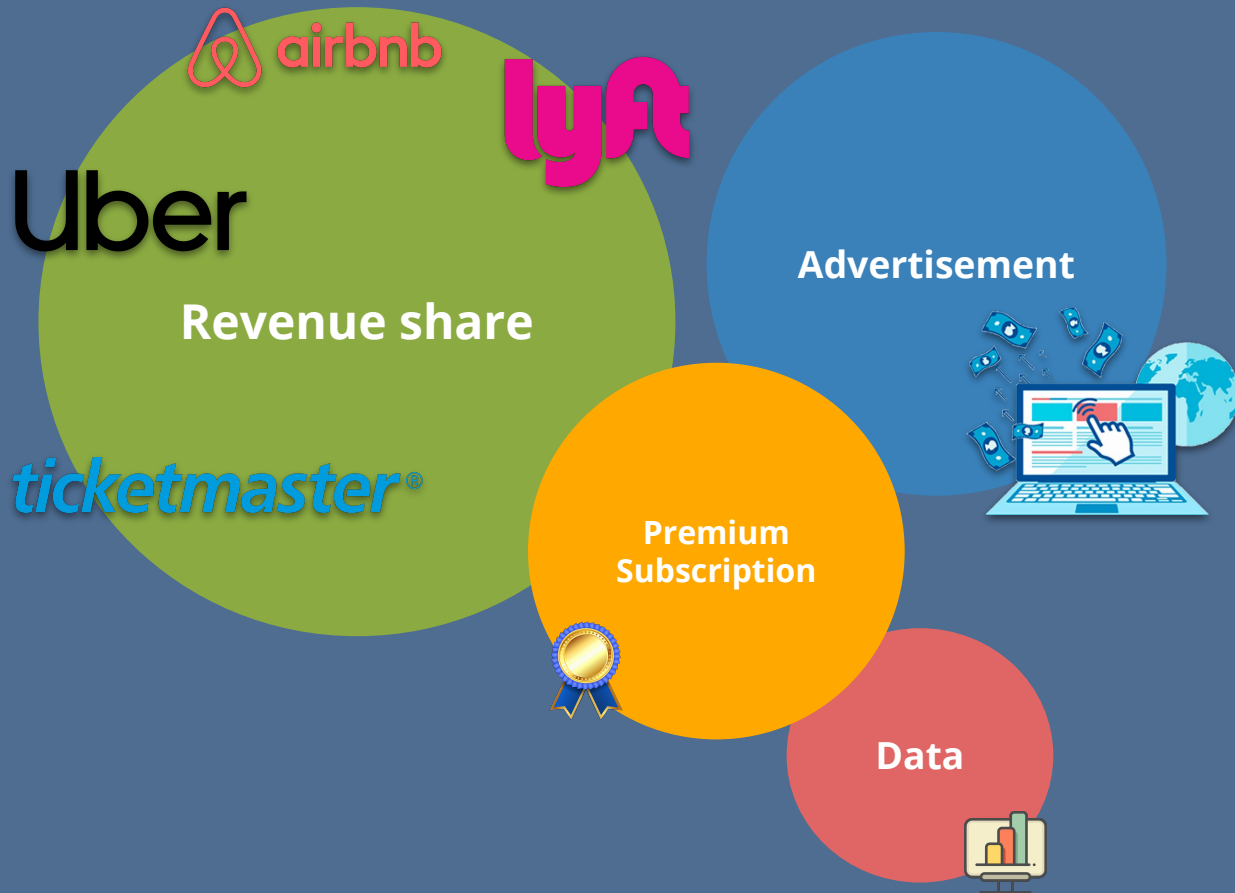$O(N^2)$ **naive**

$O(N)$ **on-demand**

$O(1)$ **parallelized**

$$\lim_{d \to \infty} O\left(\frac{n}{d}\right) = O(1)$$

under infinite server limit

Runtime (s) vs User Count, with curves labeled $O(N^2)$, $O(N)$, and $O(1)$.

Business Model

Disrupting the location-based social media market

Revenue share

Advertisement

Premium Subscription

Data

Travonde and Our Solution

- Travonde offers great activities tailored to an individual's preferences

- Our product will help with the **difficulty of finding companions** to partake in these events

  - Suggestions are based on Travonde's algorithm

- Word of mouth

  - Generating positive feedback in user community

  - Dramatically expanding Travonde's sphere of influence

Credits & Works Cited

- ❖ Ascend
- ❖ Travonde
- ❖ Slide Carnival for Clipart & Coloring

- ❖ Design on Aging: Independent Living Study
- ❖ University of Michigan National Poll on Healthy Aging
- ❖ Statista, a Business Data Platform

Thanks for listening!

Any questions?