TIMBLE

The Adaptive Blind-date App

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What is Timble?

What we want?

To help people meet someone they'd actually like **beyond looks**

Our Focus?

Give user the **knowledge and power** to decide based on personality rather than looks

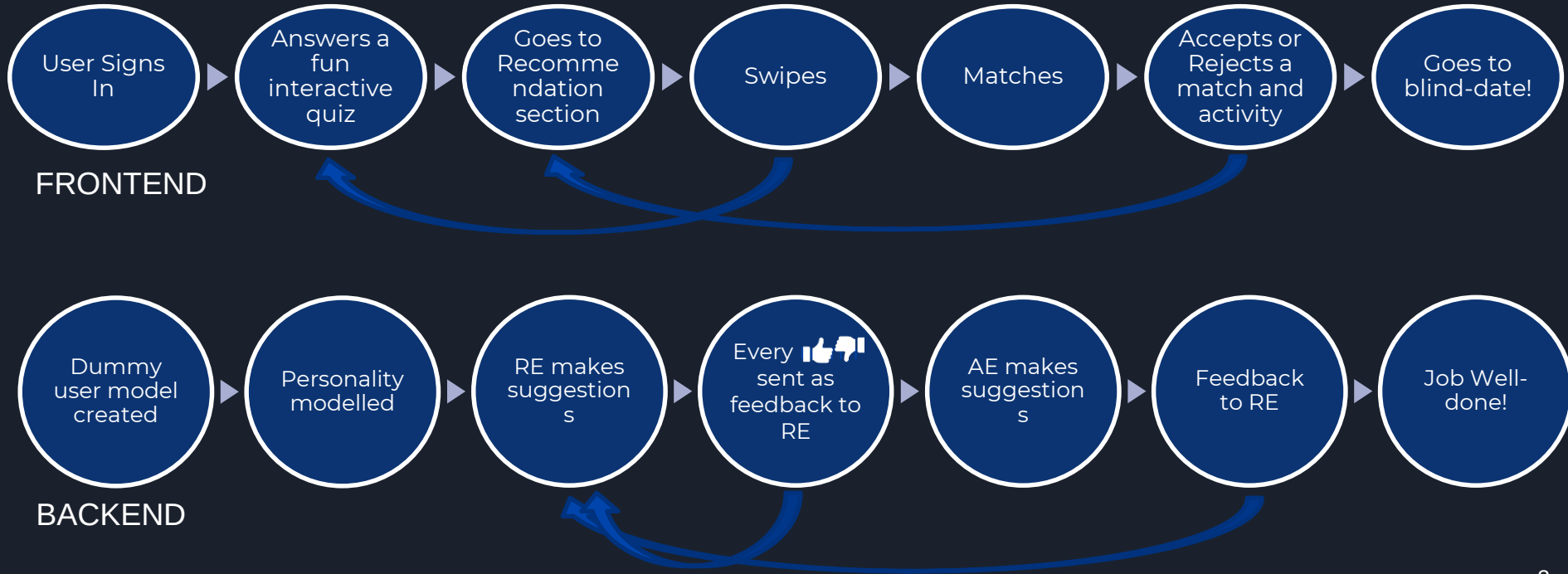
How?

We recommend outdoor activities with a match based on matching features in personalities

Is it Adaptive?

All **suggestions adapt** per user's response to suggested matches, among other adaptive features

What User sees?
What happens under the hood?



RE: Recommendation Engine AE: Activity Suggestion Engine

How to define “User Characteristics”?

Extraversion	• cheerful, takes initiative and is communicative? • reserved and submissive?
Openness	• loves novelty, is generally creative? • conventional in thinking, prefers routines?
Agreeableness	• friendly, empathetic and warm? • shy, suspicious and egocentric?
Conscientiousness	• motivated, disciplined and trustworthy? • irresponsible and easily distracted?
Neuroticism	• anxious, inhibited, moody and less self-assured? • calm, confident and contented?

*https://pages.uoregon.edu/sanjay/pubs/bigfive.pdf

How do we make a “User Model”?

Explicit User Modeling

Interactive and fun set of Questions → Updating each characteristic score of user

Characteristic score += (±question response) / (N questions answered for this characteristic)

How do we display a suggestion? “Recommender Engine”

- Euclidean distance between the two users
- Also, between user and his ideal match
- Match score is calculated for each user with every other user
- Engine selects top n users based on the score

Match score *= euclidean(user-1, user-2) + k * euclidean(user-1,* ***user-1 ideal match****)*

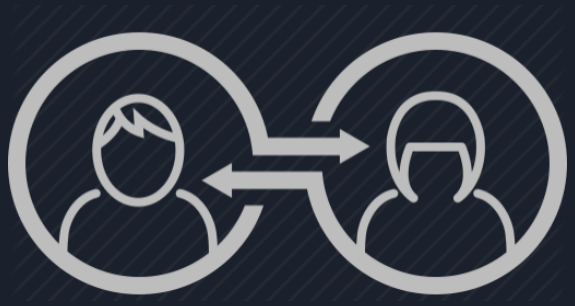
But what in the world is an “ideal match”!?

What happens when user swipes? “Feedback Algorithm”

- “Ideal” match is someone you dream of! This person has all qualities a user wants.
- Each characteristic of the “ideal” match is updated based on corresponding features of accepted/rejected user
- Feedback is taken and an “ideal” match is created
- Used to improve recommendations

What happens when user finds a match? “Activity Model”

- Both users are shown and recommended an activity to go to, which is based on their common traits
- Yelp Fusion API for information on millions of businesses
- Recommend activity with highest rating



Activity-Trait Map

Openness	Conscientiousness	Extraversion	Agreeableness	Neuroticism
Escape Games	Fishing	Hiking	Arcades	Sailing
Do-It-Yourself Food	Yoga	Amusement Parks	Diners	Yoga
Shopping Centers	Museums	Climbing	Aquariums	Art Galleries
Bike Rentals	Tea Rooms	Go Karts	Beaches	Mini Golf
Bowling	Golf	Horseback Riding	Cinema	Lakes

How do we suggest an Activity “Activity Recommendation Algorithm”

- Each activity is rated on each trait
- Euclidean distance between matched users and activity characteristics
- Activity score calculated for users and activities
- Recommend activity with minimum score

Activity score *= euclidean(user1 char * activity char, user2 char * activity char)*

What were some Key Challenges?

- **User Characteristics**
  - Which metrics to chose?
  - Which visualization to use for best user understanding?
- **Building a questionnaire**
  - Will the question be relevant to the user?
  - How to map a question to a characteristic?
- **Recommendation**
  - Which metric would be best for user match score?
  - How to create an “ideal” match?
  - Can we improve recommendations through feedback?

What are some Key Features of Timble?

- **User Modelling**
  - User Model less prone to change as more questions answered
  - User Model updated based on answers given by the user
- **Recommendation/Activity Engine**
  - Feedback taken on each positive or negative swipe
  - Match score dynamically calculated for every user with every other user
- **User Understanding**
  - Visualization to help user understand what is common and what is not
  - Help button provided to explain meaning of each trait term
- **Dual View**
  - App can be accessed on both mobile devices as well as desktops

What do we intend to do in future?

- **User Scrutability-** Show user why a match/activity was suggested
- **User Control-** Using other characteristics rather than just personality traits to match users, such as distance, age, height
- **More Adaptivity-** Using feedback on Activity Model to improve activity suggestions
- **App aesthetics-** There is always room for improvement in design!
- **Robust modelling-** Use of statistically backed machine learning model for User Model Generation, Recommender Engine and Activity Engine
- **Research-** More focus on Question-User trait mapping and Activity-User trait mapping

References

1) https://pages.uoregon.edu/sanjay/pubs/bigfive.pdf

2) https://www.yelp.com/developers/documentation/v3/get_started

3) https://www.pbarrett.net/techpapers/euclid.pdf

4) "*Analysis of the difference between the Euclidean distance and the actual road distance in Brazil*", Daniel Neves Schmitz Gonçalvesa, Carolinne de Morais Gonçalvesb, Tássia Faria de Assisc, Marcelino Aurélio da Silvad

DEMO