Workout Recommender System

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Understand the problem

- How most of fitness applications work?

- Why these apps suggest you some workouts or other routines?

- Are you bored because they always proposed the same exercises?

- Are you sure that these exercises are adecuated for your complexity?

- Most of app recommend exercises for doing at home and not for gym.

What exists in the market?

- **Gymfitty**: Personalized routines based on monitoring the performance.

- **Kaia Personal Trainer**: Use computer vision for registering the movements.

- **Nike training club app**: Workouts are curated by master trainers after collaborative filtering

Our product

- What is it?
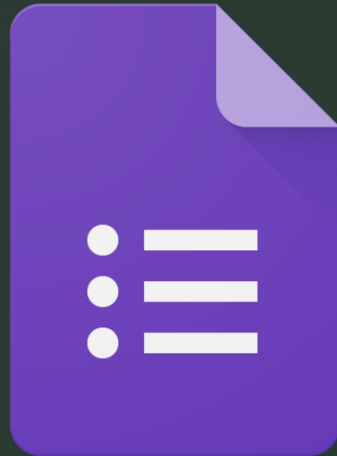
- Principal function

- Difference with competitors

Data understanding

Data understanding

- How we get the data?

Google Forms

ForoCoches.com

- **Initial state of the data**

- **Same exercise – Different name**
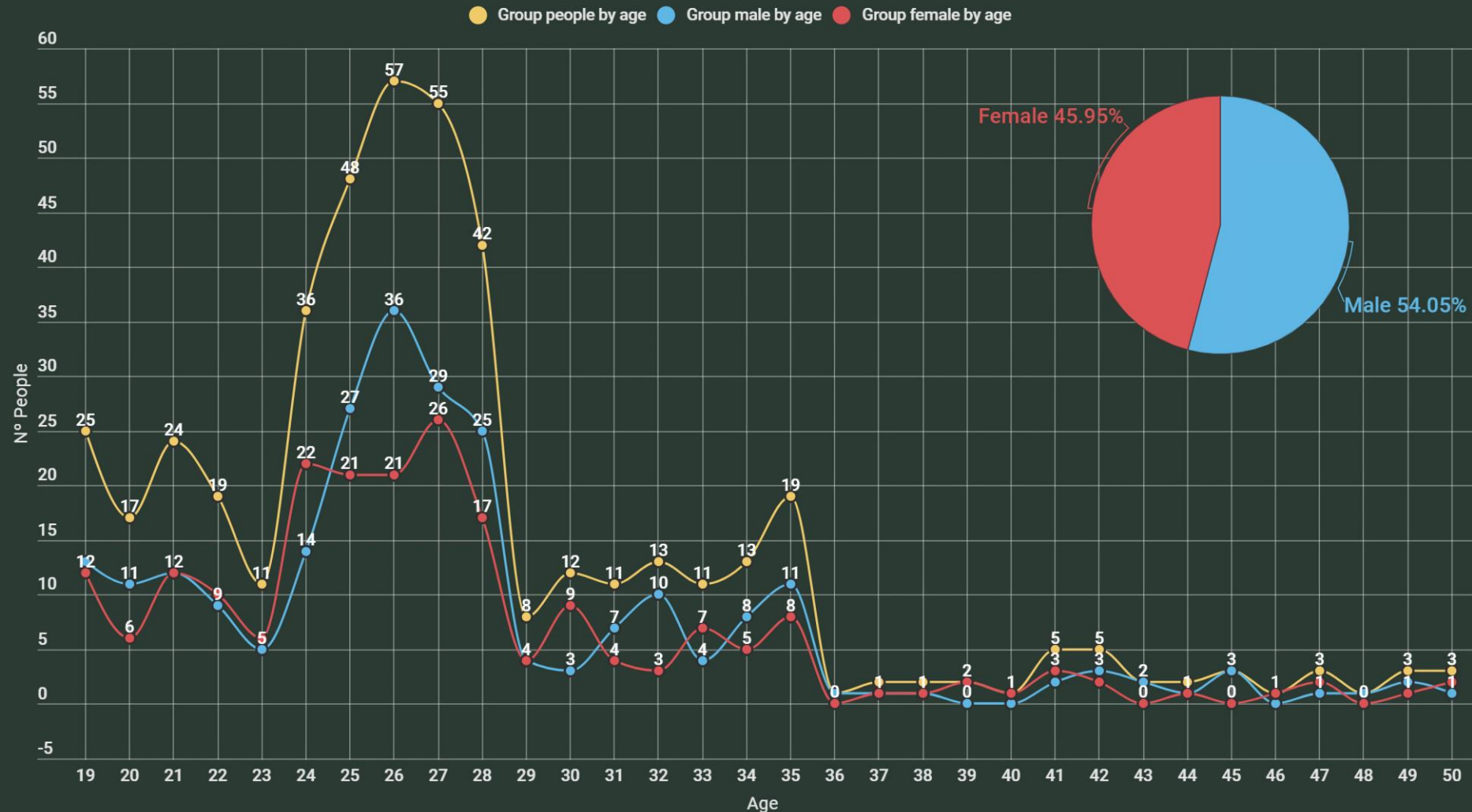
    - Biceps – Curl biceps
    - Sentadillas – Sentadilla

    } **Manual effort !**

Attributes

Gender	Neck	Hip	Exercise 1
Weight	Shoulders	Bicep	Exercise 2
Height	Chest	Quadricep	Exercise 3
Age	Waist	Frequency	…
		Targets	

Data understanding

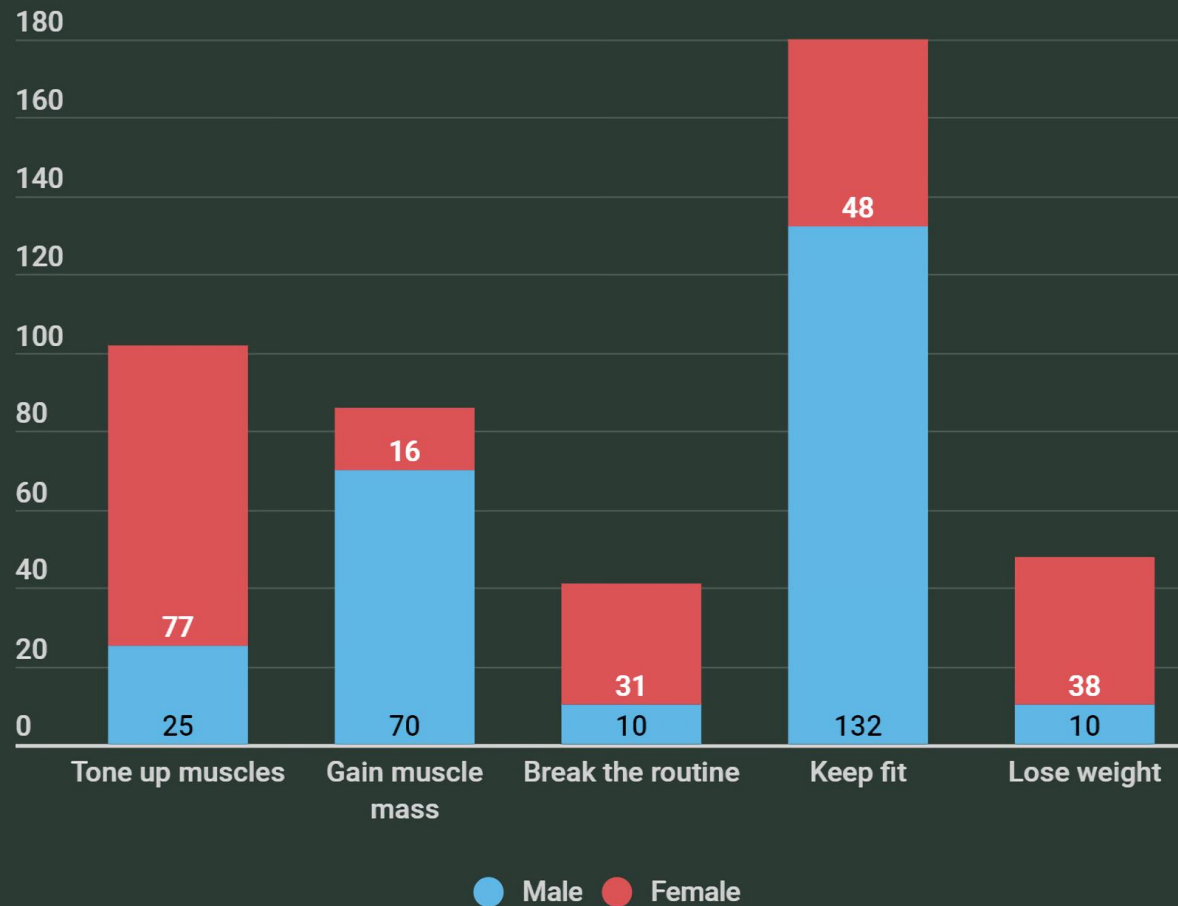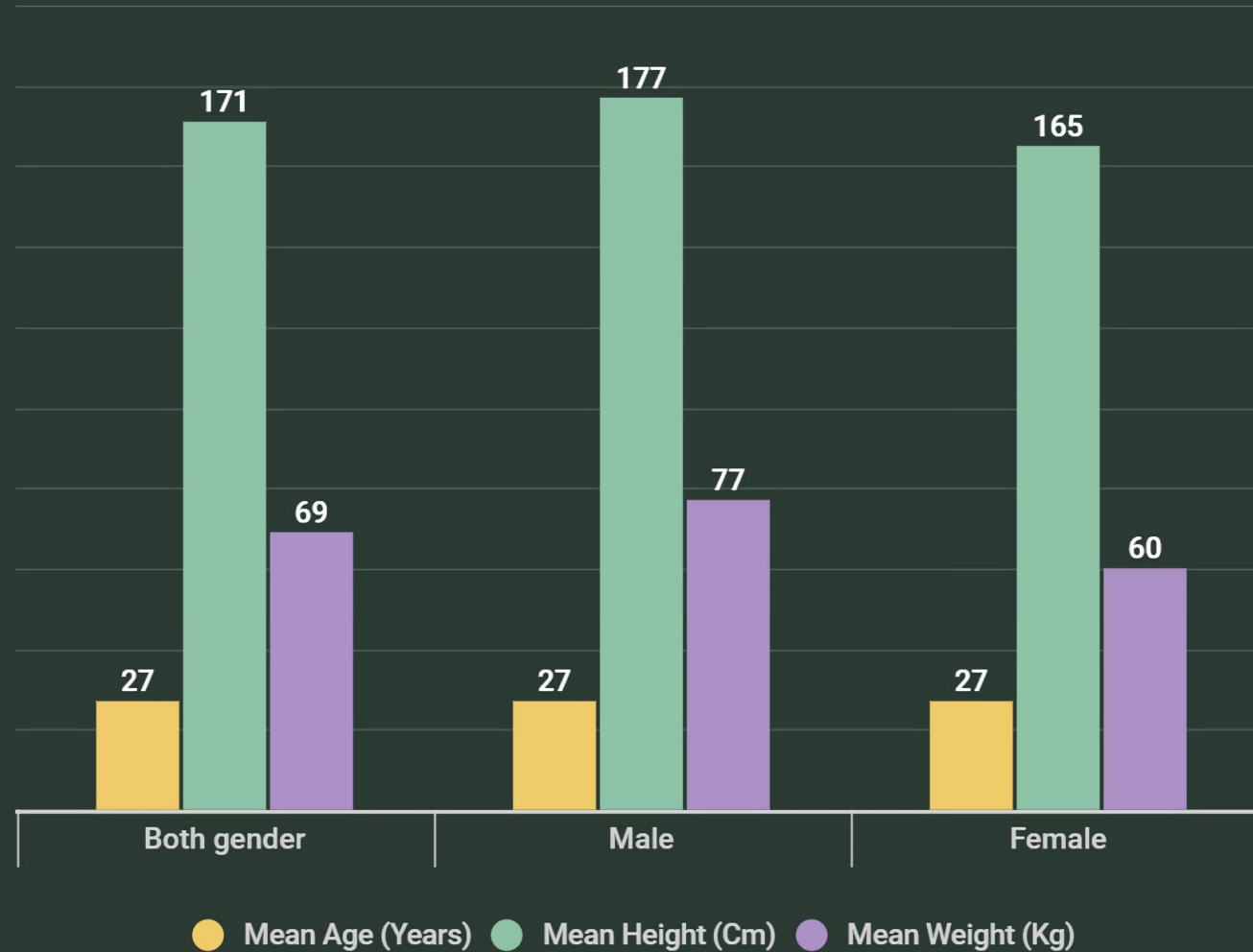## Most likely objectives by gender

Data understanding

Mean distribution of age, height and weight

	Both gender	Male	Female
Mean Age (Years)	27	27	27
Mean Height (Cm)	171	177	165
Mean Weight (Kg)	69	77	60

● Mean Age (Years) ● Mean Height (Cm) ● Mean Weight (Kg)
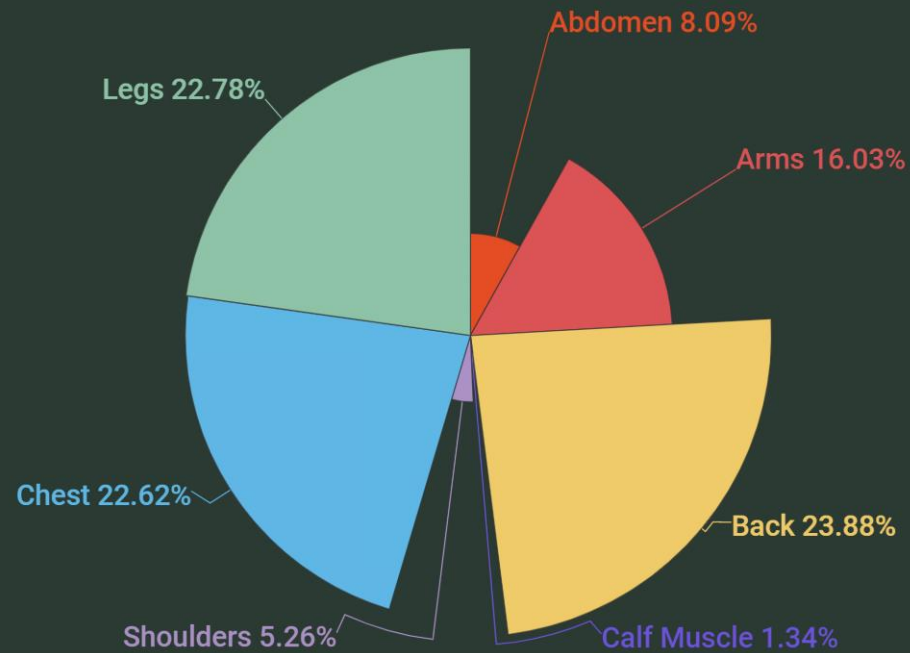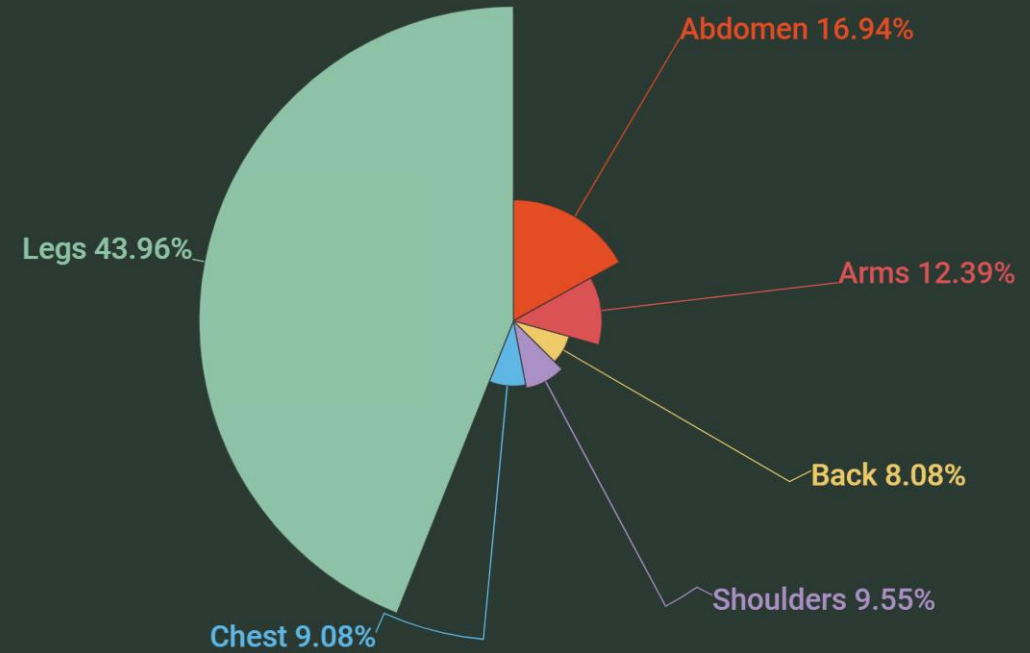
Data preparation

Data preparation

- Separate the whole data into user_data and routine_data

- Drop some attributes of data_user.

- **Feature engineering**: create new relevant atribute (BFP).

user_data

	Id	gender	Peso	Altura	edad	Cuello	Hombros	Pecho	cintura	cadera	Biceps	Cuadricep	grasa
0	1	Mujer	60.0	156.2	26	36	92.8	87.6	74.7	97.7	28.1	57.0	29.037009
1	2	Mujer	66.8	179.8	19	36	110.2	89.9	66.0	97.1	27.0	59.0	18.057040
2	3	Mujer	53.6	161.0	19	35	95.7	80.8	64.8	92.0	26.5	57.4	19.889776
3	4	Mujer	49.1	158.8	40	35	93.9	81.6	58.8	89.3	25.4	51.6	15.495101

routine_data

	Id	ejer1	ejer2	ejer3	ejer4	ejer5	ejer6	ejer7	ejer8	ejer9	ejer10	ejer11
0	1	Flexiones de pierna sentada	Extensión del flexor de la cadera	Sentadillas con pelota suiza	Flexiones en T	Deslizamiento contra pared	Plancha	Remo sentado con mancuernas	Elevaciones con piernas rectas en banco horizo...	NaN	NaN	NaN
1	2	Rotacion externa de 45 grados con polea	Press hacia abajo de triceps	Estocadas estaticas	Elevación frontal de pesa	Elevacion de caderas	Step cruzado con mancuernas	Flexiones de pierna sentada	Paseo de puntillas	NaN	NaN	NaN
2	3	Flexiones de pierna sentada	Press hacia abajo de triceps	Remo alterno con mancuernas	Step cruzado con mancuernas	Zancada con aducción isométrica	Press hacia abajo de triceps	Plancha con los brazos extendidos	NaN	NaN	NaN	NaN
3	4	Elevacion de gemelos con una pierna	Press de banca inclinado con mancuernas	Extensión de tríceps	Curls de biceps zottman de pie	Rotacion interna con cinta	Abdominales con pelota suiza	Burpee a un brazo	NaN	NaN	NaN	NaN

Data preparation

- Standarize the data_user

- Split into test and train by gender (20%-80%)

user_data_scaled

	Id	gender	Peso	Altura	edad	Cuello	Hombros	Pecho	cintura	cadera	Biceps	Cuadricep	grasa
0	1	Mujer	0.347222	0.137860	0.225806	0.285714	0.141104	0.323276	0.304900	0.470149	0.285	0.451477	0.660054
1	2	Mujer	0.425926	0.623457	0.000000	0.285714	0.496933	0.372845	0.147005	0.455224	0.230	0.535865	0.403000
2	3	Mujer	0.273148	0.236626	0.000000	0.142857	0.200409	0.176724	0.125227	0.328358	0.205	0.468354	0.445907
3	4	Mujer	0.221065	0.191358	0.677419	0.142857	0.163599	0.193966	0.016334	0.261194	0.150	0.223629	0.343022
4	5	Mujer	0.283565	0.164609	0.161290	0.285714	0.184049	0.250000	0.154265	0.328358	0.125	0.299578	0.475817

Modeling process
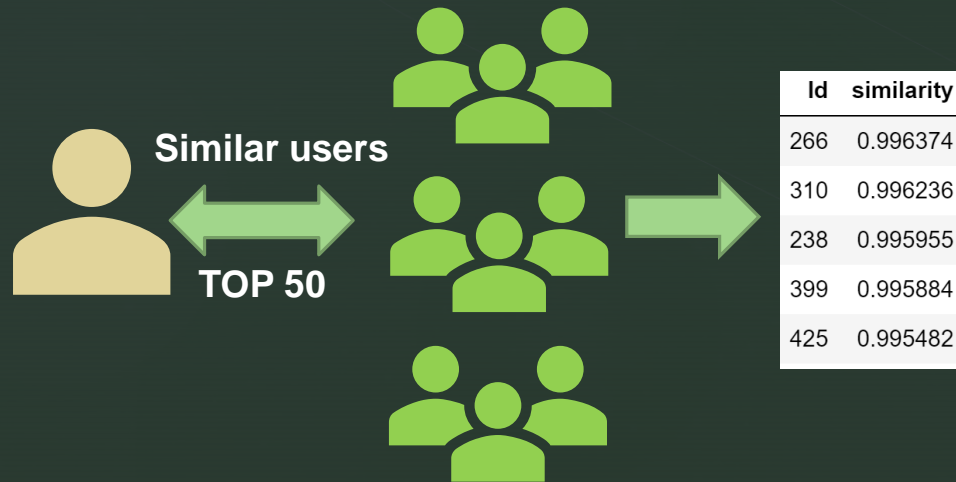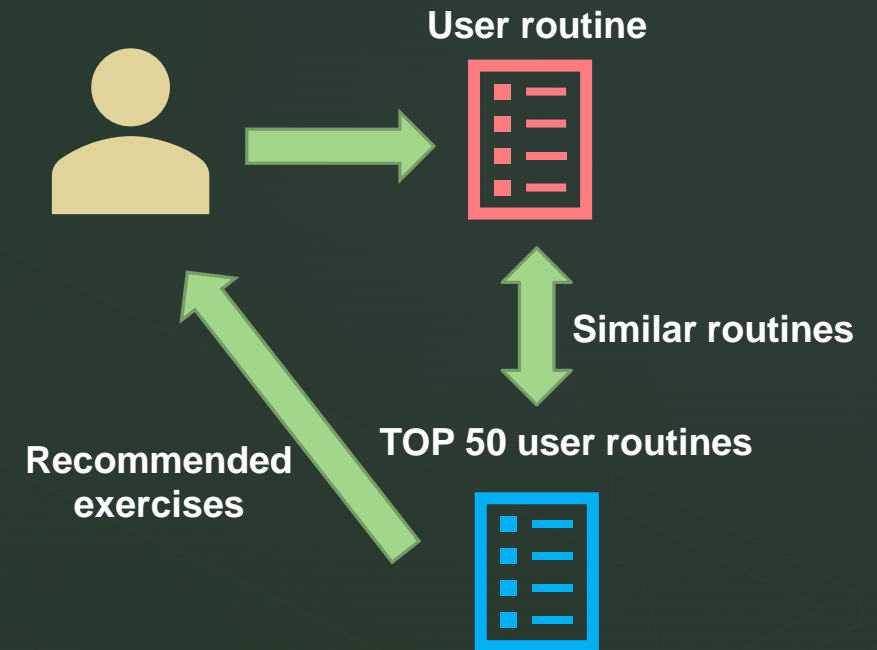
Model evaluation

Model evaluation

userid	exercise 1	exercise 2	exercise 3	exercise 4	exercise 5	exercise 6	exercise 7
254	A	B	C	D	E	F	G

userid	exercise 1	exercise 2	exercise 3	exercise 4	exercise 5	exercise 6	exercise 7
254	A	B	C	D	E	F	G

Recommended	exercise 1	exercise 2	exercise 3	exercise 4	exercise 5	exercise 6	exercise 7
routine	H	I	J	K	E	G	L

RECALL = 2/3 = 0.67
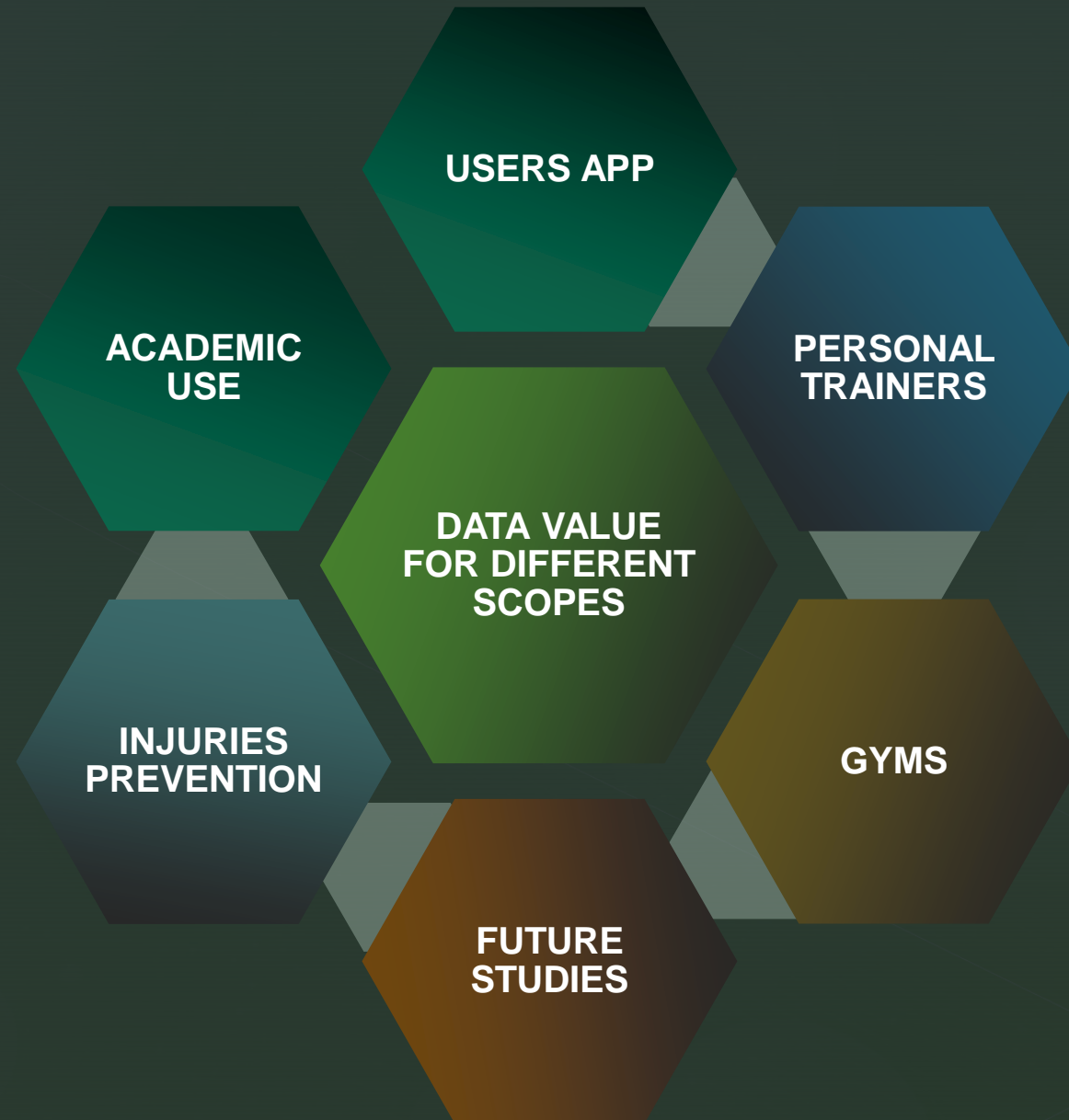
THANKS GRACIAS DANKE MERCI OBRIGADO GRAZIE