Building the Perfect Personalised Menu!

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About Gousto

You pick from over 50 recipes each week

We deliver a box of fresh ingredients in exact proportions with step-by-step recipe cards

No planning, no supermarkets, no waste!

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Building the Perfect Personalised Menu!

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Menu Creation

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What's on the menu?

14/07-21/07

21/07-28/07

28/07-04/08

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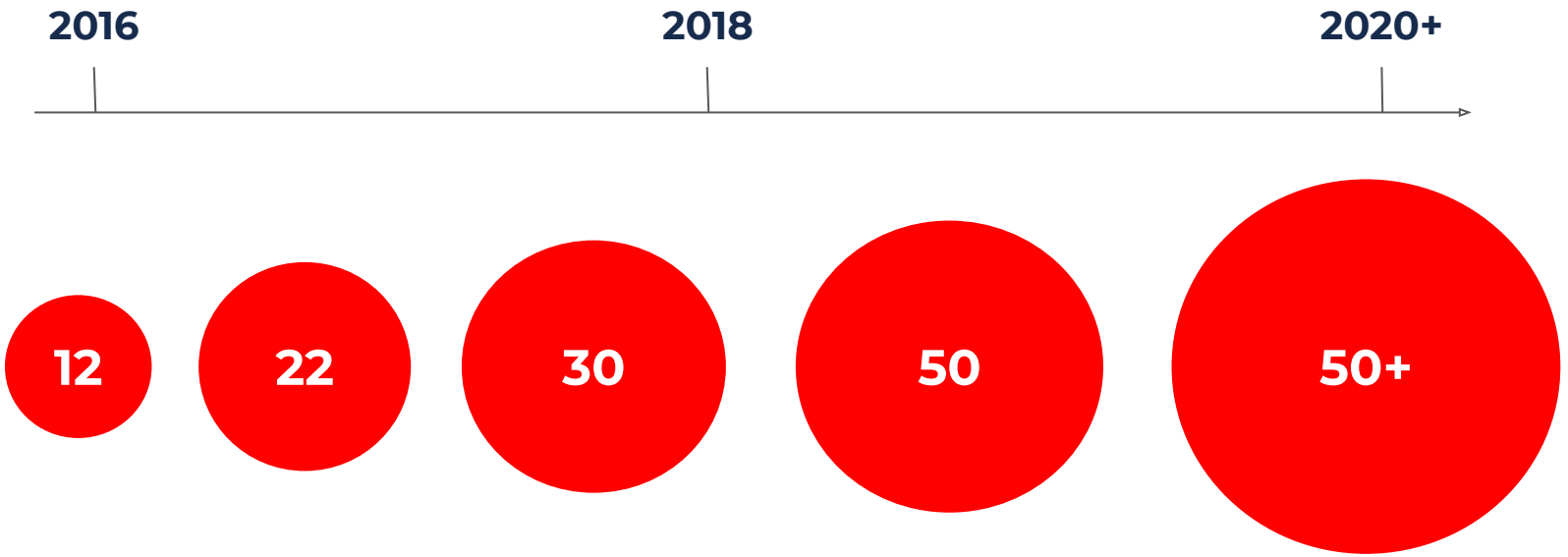
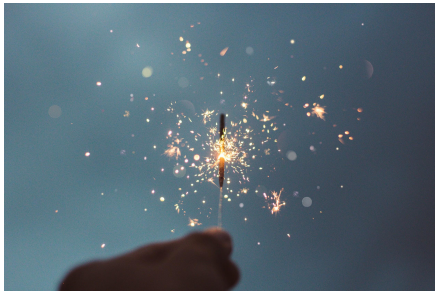
Menu Size



Menu Requirements



VARIETY

We want to ensure we offer a wide range of inspiring recipes

https://unsplash.com/photos/abkEAOjnY0s

ON BUDGET

Menu needs to be planned to hit the budget

https://unsplash.com/photos/pElSkGRA2NU

OPERATIONS

Menu needs to comply to several operational constraints

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Manual Process

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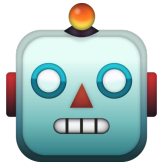
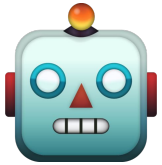
Manual Process

Manual




Data-driven with manual touches



Data-driven

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Data-Driven Menu

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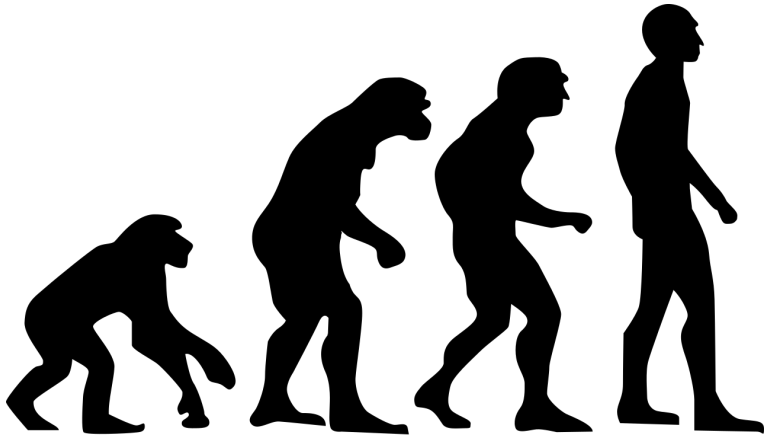
Genetic algorithm

Evolutionary optimisation method based on natural selection



INDIVIDUAL
A member of the population (a menu)

POPULATION
Set of N individuals (a set of menus)

MUTATION
Change of an element in individual

[**Rec 2, Rec 10... Rec 52**] -> [**Rec 2, Rec 12... Rec 52**]

CROSSOVER
Combination of two individuals to make a new one

A [**Rec 2, Rec 10... Rec 52**] **B** [**Rec 5, Rec 8... Rec 47**]

↓

A1 [**Rec 2, Rec 8... Rec 47**] **B1** [**Rec 5, Rec 10... Rec 52**]

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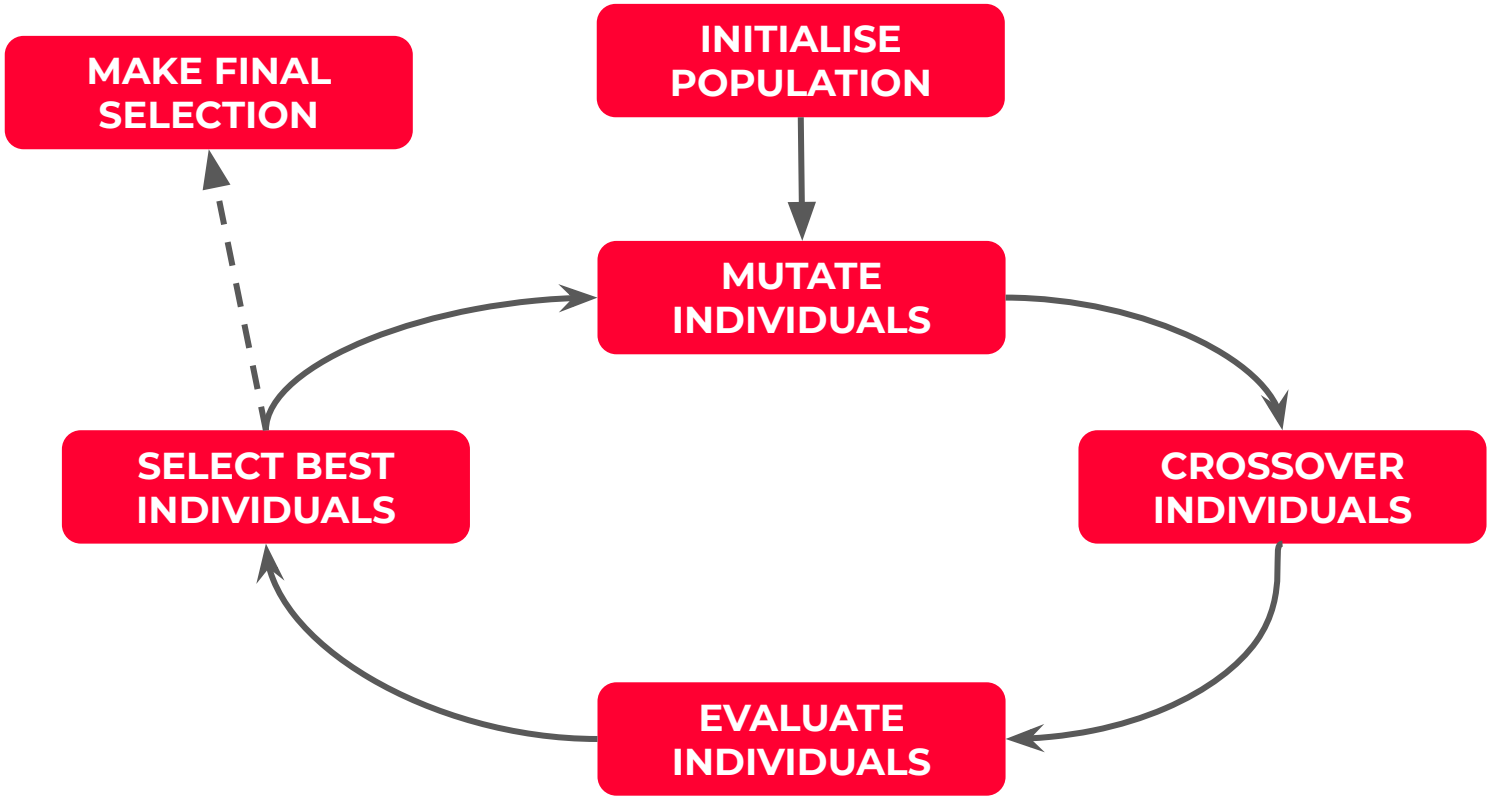
Genetic algorithm

INDIVIDUAL = [R123, R456, R789...]

POPULATION = [I1, I2, I3....I_N]



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DEAP

DISTRIBUTED EVOLUTIONARY ALGORITHMS IN PYTHON

- Open-source library supporting a range of Evolutionary Algorithms
- Based on a toolbox - define each important function for evaluate, mutate etc.
- Fast to initially set up and start prototyping
- Parallelisation available

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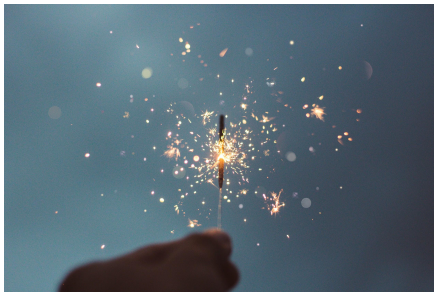
Algorithm Objectives

COST PER MEAL

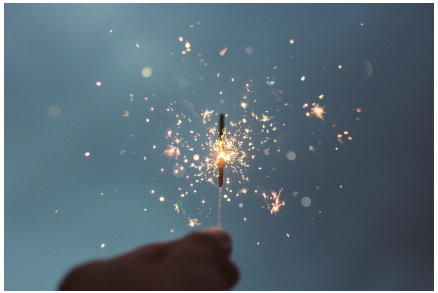


AVERAGE VARIETY

Algorithm Objectives

COMPETING OBJECTIVES

COST PER MEAL



AVERAGE VARIETY

NUMBER OF UNIQUE INGREDIENTS

Results!

- Successfully reduced average cost per menu
- Given Food team time to spend focusing on the important things
- Allowed us to be agile through a very challenging time

We still require manual changes, mainly due to the need of a better definition of menu variety

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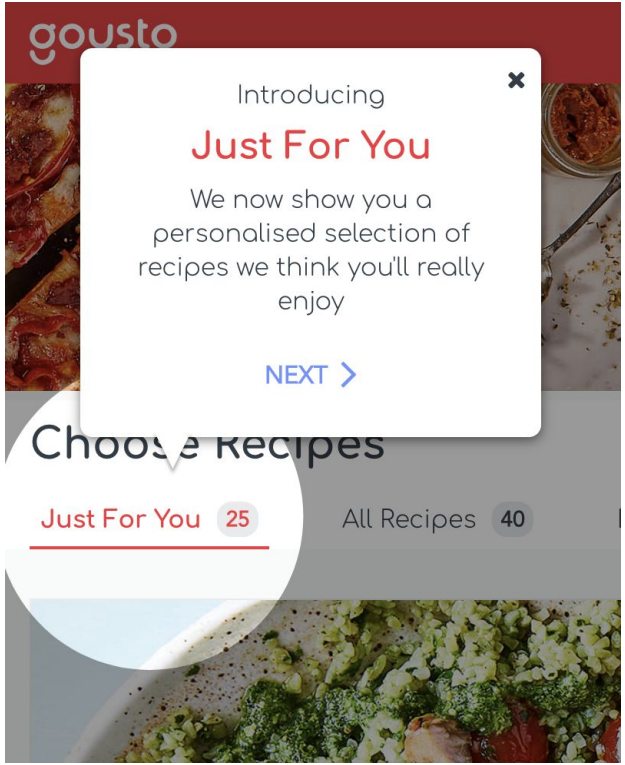
Personalising the menu

Recommendations

- We use recommendations as a way of helping users navigate the large amount of choice
- We offer personalised ordering as well as top choices in a personalised collection



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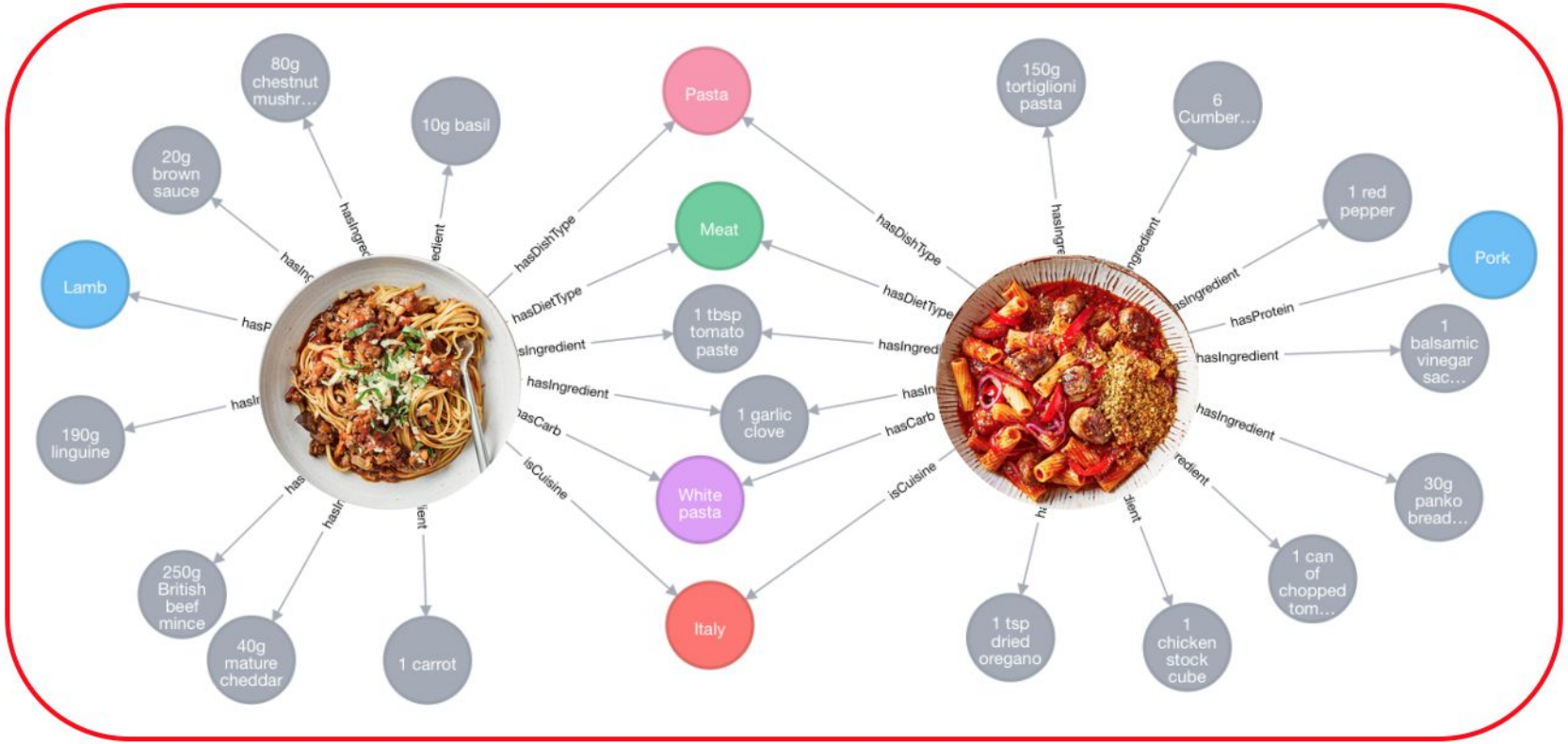
Content-based



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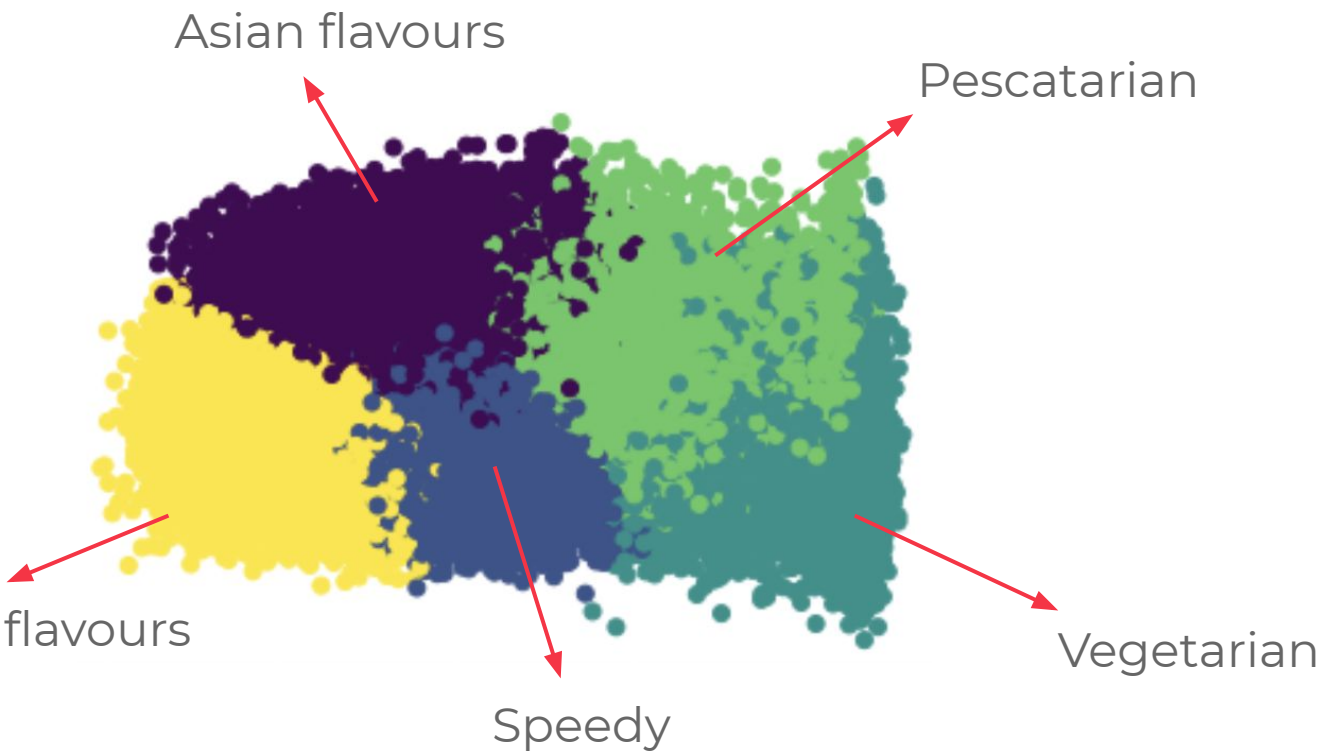
Collaborative filtering

K-means clustering

PCA for visualising



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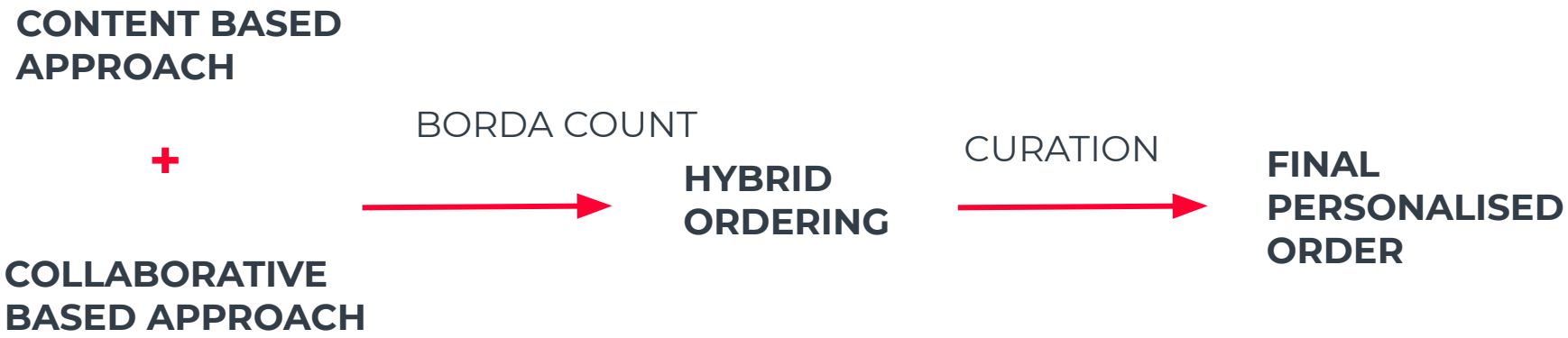
Hybrid approach



Results!

- Successfully seen an increase in conversion when applying personalisation
- Customers consistently order from the higher ranks of their menu

We do not have dynamic recommendations or a way for customers to give us feedback on personalisation

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https://unsplash.com/photos/fnztIlb52gU

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Future

Future

- Tackling **recipe development** process to assess gaps in our library. Filling these should lead to better menus!
- 50 is not the end destination - when there are more recipes, we will need to much **stronger links between** menu creation and recommendations

https://unsplash.com/photos/C7B-ExXpOIE

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Learnings

Good discovery sets you up for success

Make sure all involved parts understand and agree on the problem you are trying to solve, even if it takes more talking!

Plan for early value release

You often don't need all the bells and whistles to start delivering value

Ensure you think about tomorrow

Make product and architecture decisions that will be as scalable for future needs as possible

Thank you