

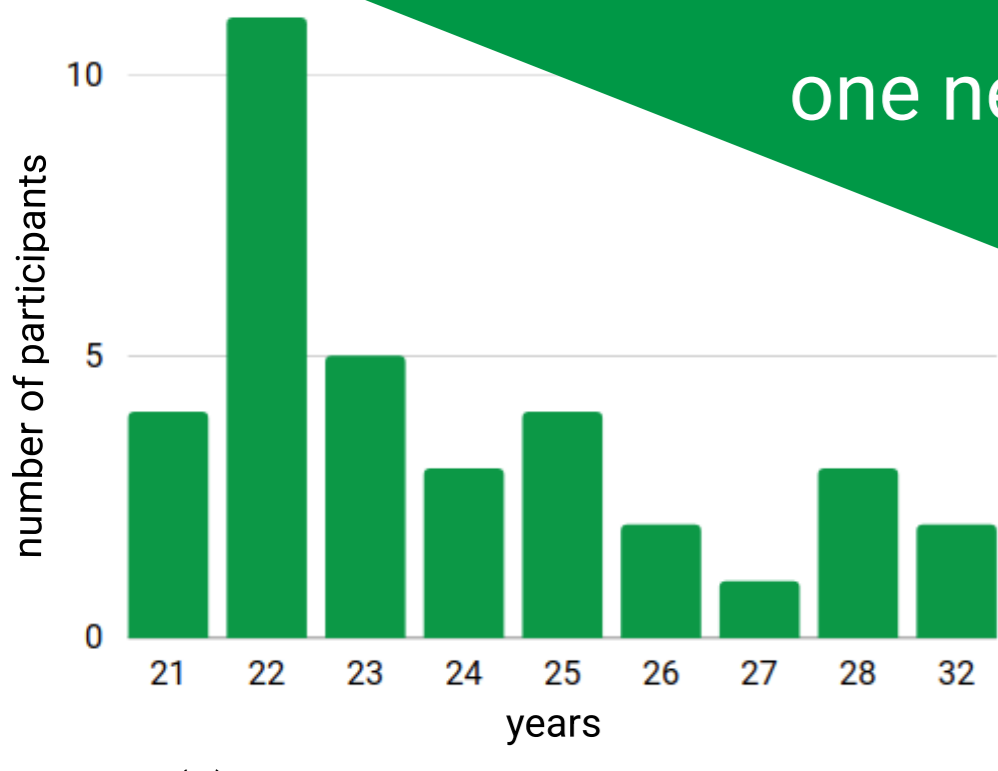


To succeed in software project one need to focus on its goal. To measure its success one needs to have

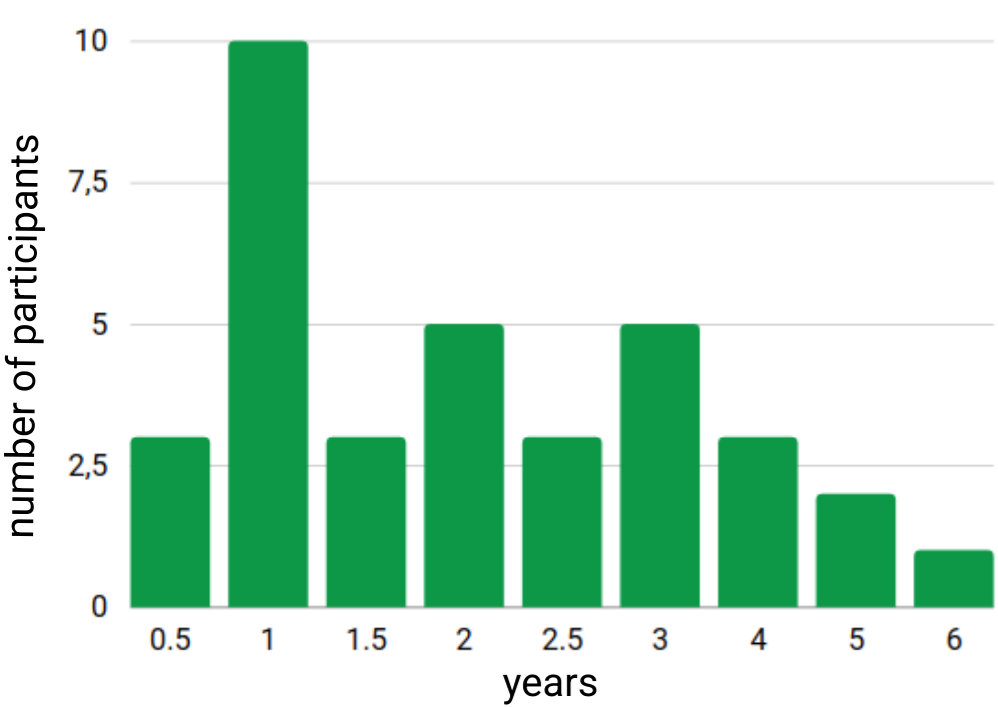
GOAL FOCUSED METRICS

A Recommender Algorithm to Automatically Generate Metrics for GQM Models in Software Development

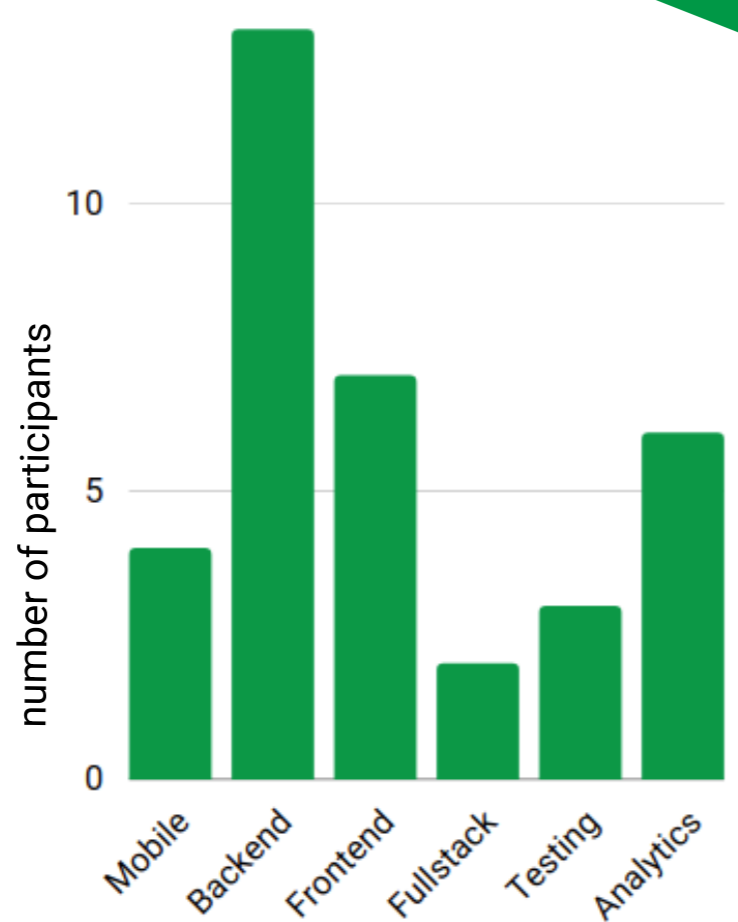
Gorb Anna
Innopolis University
Faculty of Computer Science and Engineering



(a) Participants distribution by years



(b) Distribution by work experience



(c) Distribution by working areas

35 Engineers

38 Goals

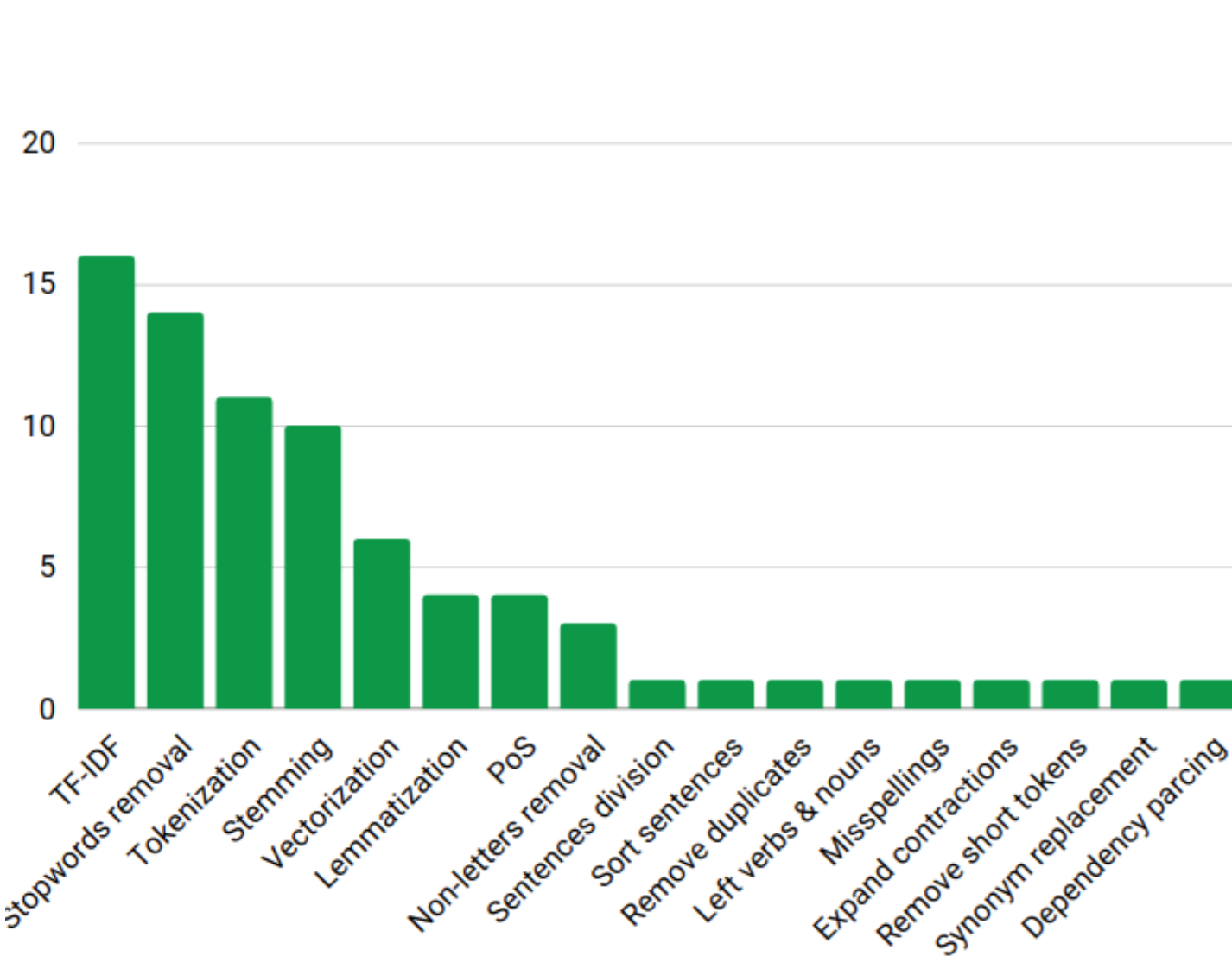
64 Questions

∞ Metrics

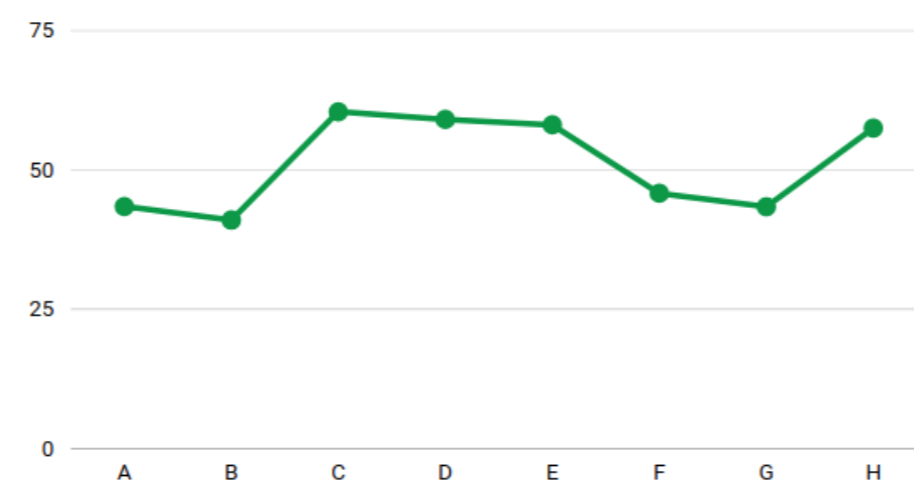
Create the library application

1. How much time the project will take?
2. How many people we need to involve?
3. How much budget we need to construct the MVP?

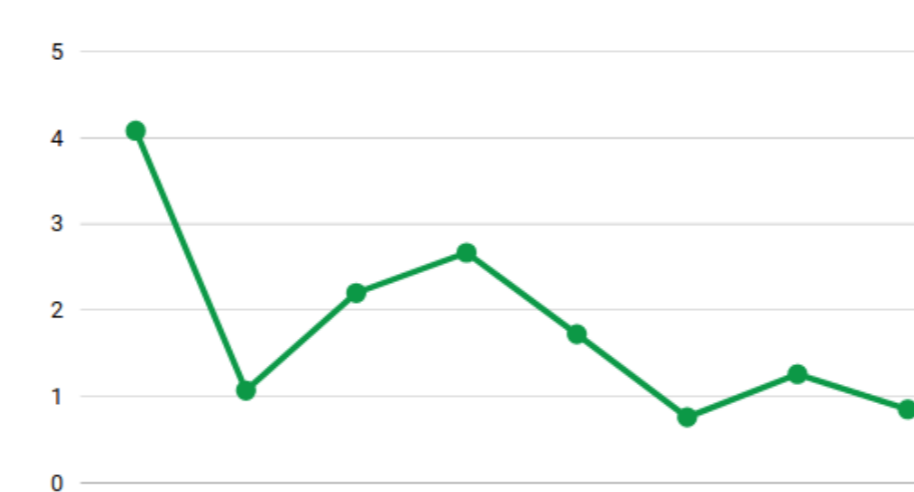
1. Amount of time
2. Number of people
3. Amount of money



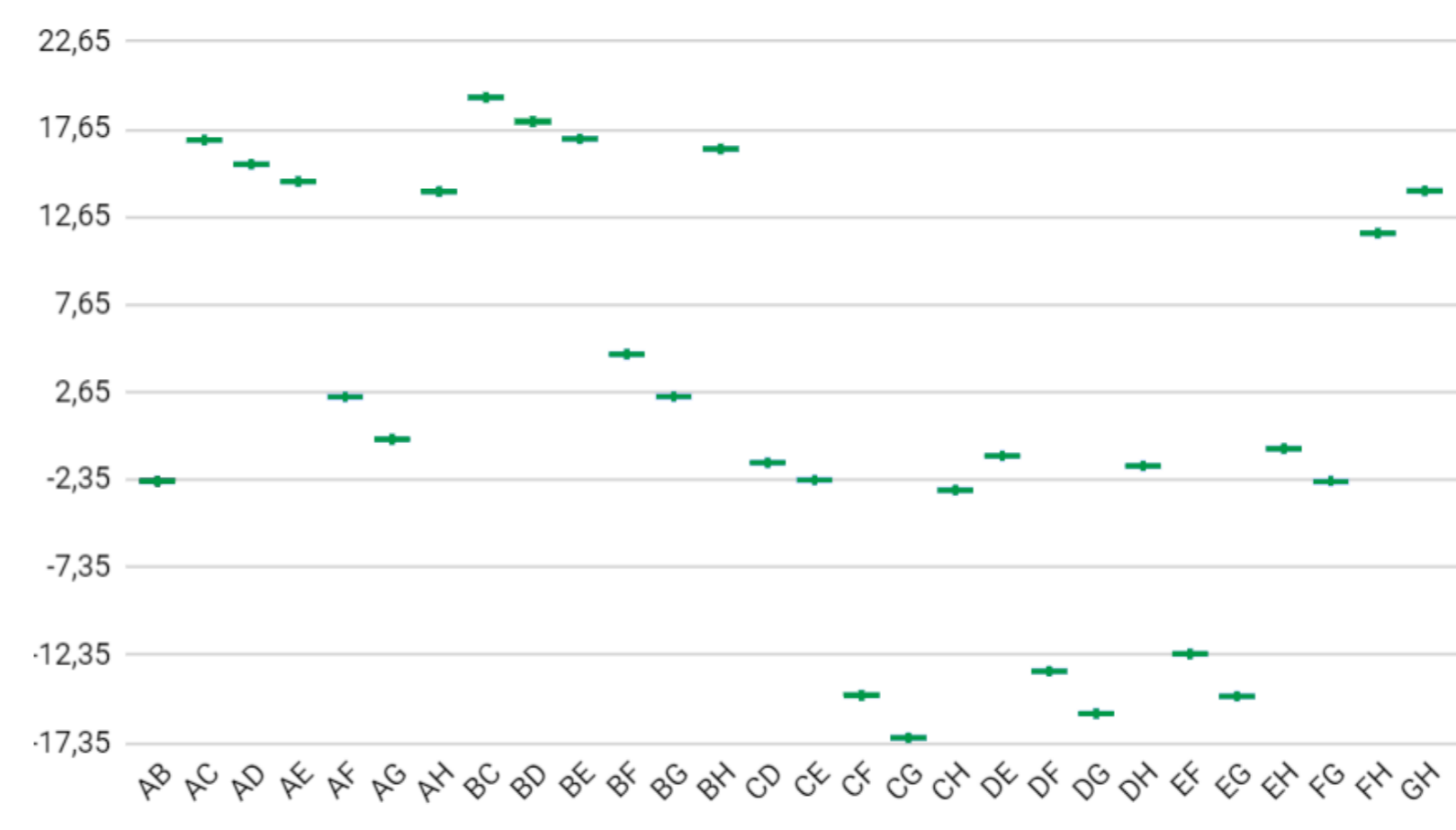
(d) Preprocessing steps usage quantity



(e) Combinations average time, ms

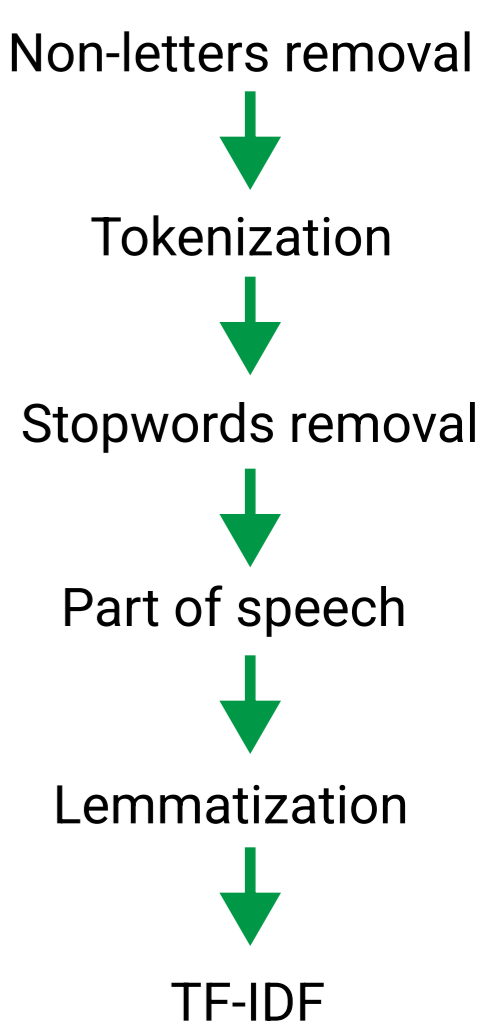


(f) Combinations standard deviation, ms



(g) Multiple pairwise comparison test using Tukey method with familywise error rate 0.05

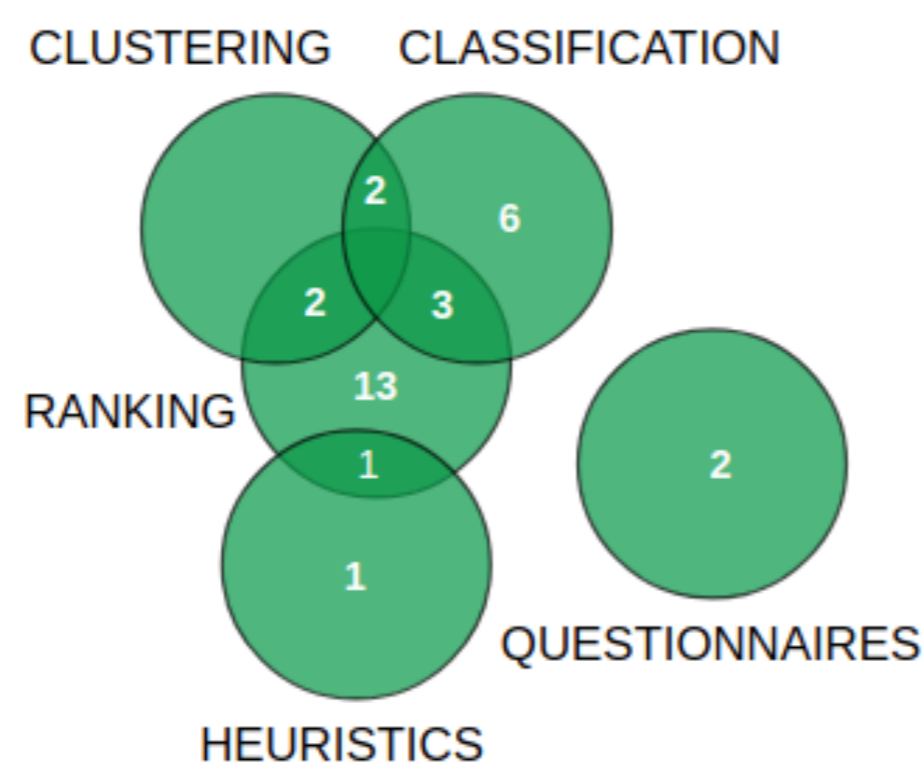
Dataset



Preprocessing



(h) Dataset division for the experiment



(i) Classification of recommender algorithms for software developers

	Problem transformation				Algorithm adaptation	
	Binary relevance	Classifier chains	Label powerset	RakelD	MLkNN	Decision trees
Accuracy	0,714	0,714	0,571	0,571	0,571	0,714
F1 Score	0,888	0,888	0,467	0,384	0,384	0,526
Hamming loss	0,008	0,008	0,03	0,043	0,04	0,024

(h) Multi-label Algorithms Comparison

Classifier chains can handle cross-dependent metrics

Binary relevance can be easily explained

Recommender

Login

username _____

password _____

Login

You don't have an account? Register here!

(j) Authorization page

Goals

Create the library application Delete

Achieve test coverage of 90% Delete

Increase team productivity by 10% Delete

(k) Goals identification

Metrics

Time

Generate Precooked Hand-pick

(l) Metrics generation

Questions

How much time the project will take? Delete

How many people we need to involve? Delete

How much budget we need to construct the MVP? Delete

(m) Questions identification

Choose the appropriate metrics:

- Time
- Number of people
- Money
- Number of bugs
- Number of reviews
- Number of issues
- Number of functions
- LOC
- Accuracy
- Test coverage
- Complexity
- Execution time

Save

(n) Metrics selection

Using a prototype, the work of the algorithm was tested on the test dataset.

Accuracy is 0,714

Prototype