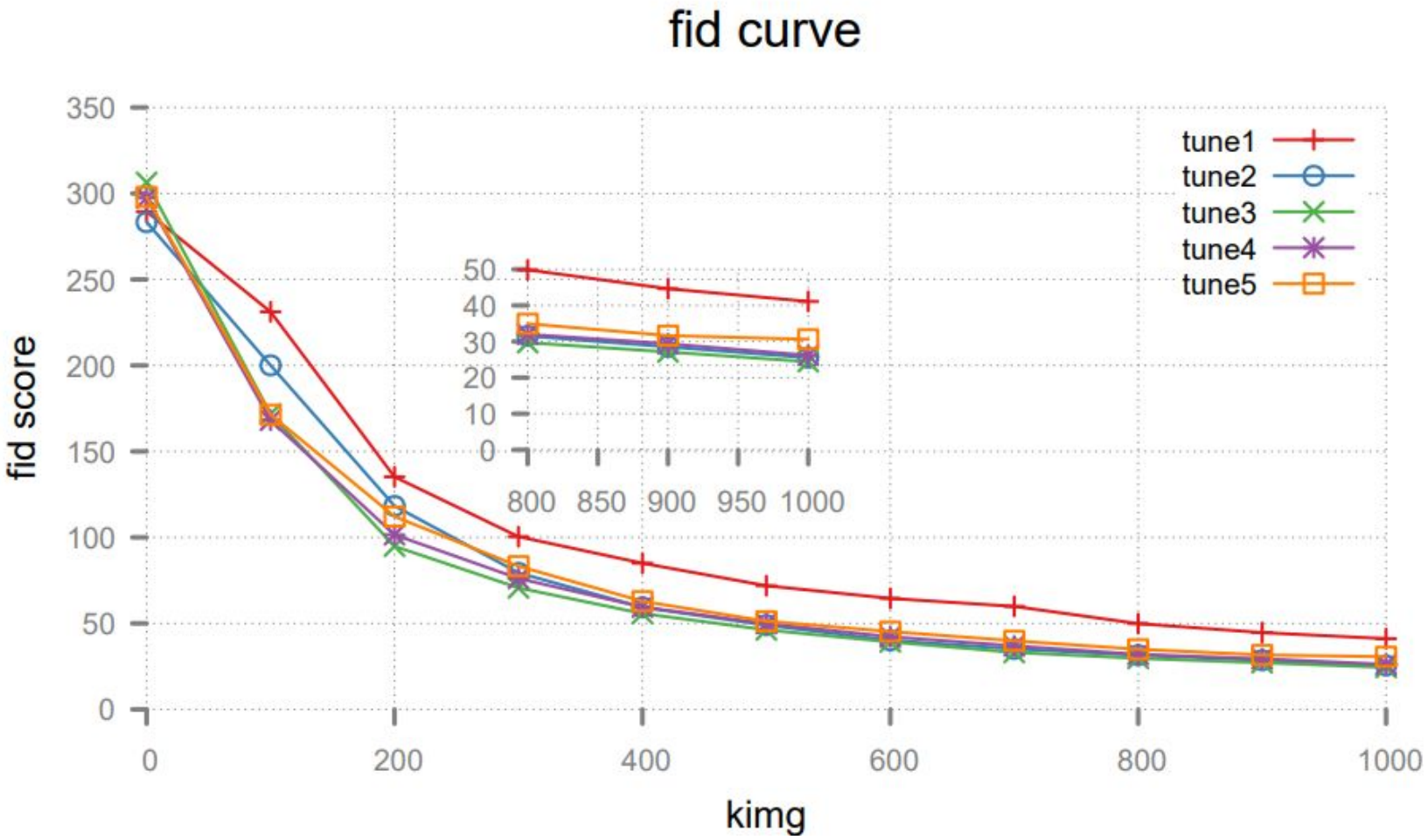
8/4 meeting

應名宥

tuning progress (image-text)

id	itd	itc	iid	iic	h	status	fid
1	0.5	1	1.25	2.5	0.2	o	41.11
2	1.25	2.5	1.25	2.5	0.2	o	25.53
3	2.5	5	1.25	2.5	0.2	o	24.41
4	3.75	7.5	1.25	2.5	0.2	o	26.18
5	5	10	1.25	2.5	0.2	o	30.61


fid curve
fid score
kimg
tune1
tune2
tune3
tune4
tune5
0
50
100
150
200
250
300
350
0
200
400
600
800
1000
0
10
20
30
40
50
800
850
900
950
1000

tuning progress (image-image)

id	itd	itc	iid	iic	h	status	fid
6	2.5	5	0.5	1	0.2	o	25.76
7	2.5	5	1.25	2.5	0.2	o	24.41
8	2.5	5	2.5	5	0.2	now	
9	2.5	5	3.75	7.5	0.2		
10	2.5	5	5	10	0.2		

optimization problem

multi-objective optimization (AGE-MOEA2)

image-text score : image-text similarity
image real score : predicted label distribution
word label score : similarity between word and label

AGE-MOEA2

- An Improved Pareto Front Modeling Algorithm for Large-scale Many-Objective Optimization. Proceedings of the 2022 Genetic and Evolutionary Computation Conference

- https://dl.acm.org/doi/10.1145/3512290.3528732

multi objective

multi objective

optimization problem

single-objective optimization (G3PCX)

image-text score : image-text similarity

G3PCX

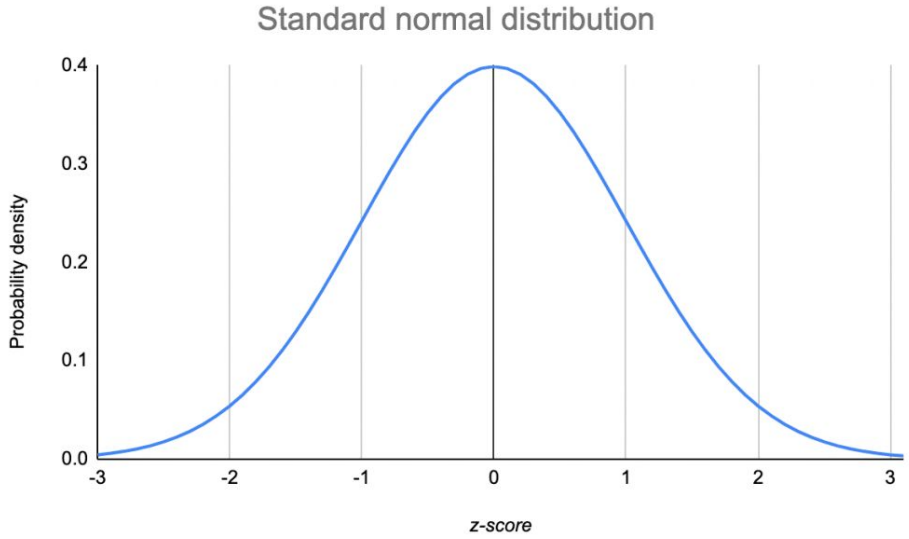
- A computationally efficient evolutionary algorithm for real-parameter optimization. Evolutionary Computation
- suitable for real parameter optimization

- https://doi.org/10.1162/1063656027609727 67

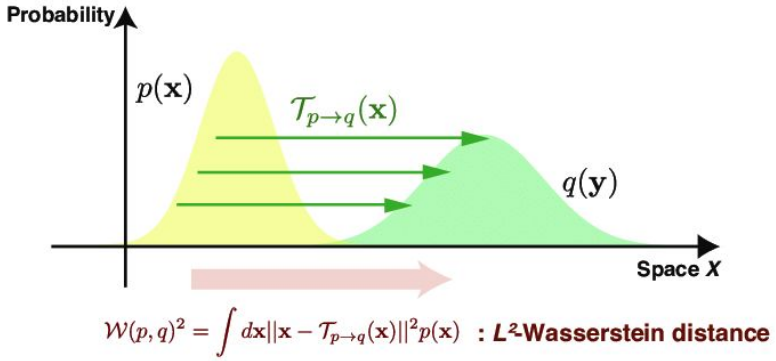
single objective

single objective

Assumption



normal distribution

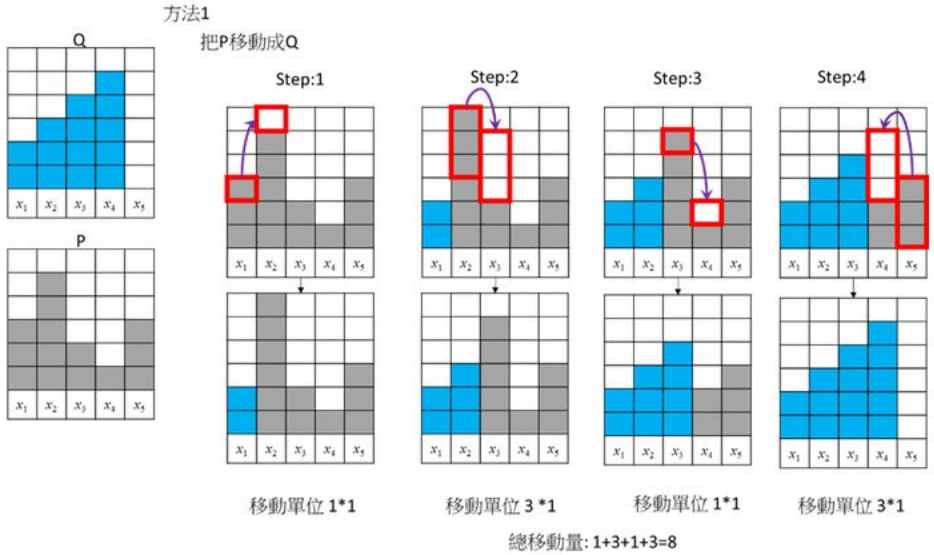


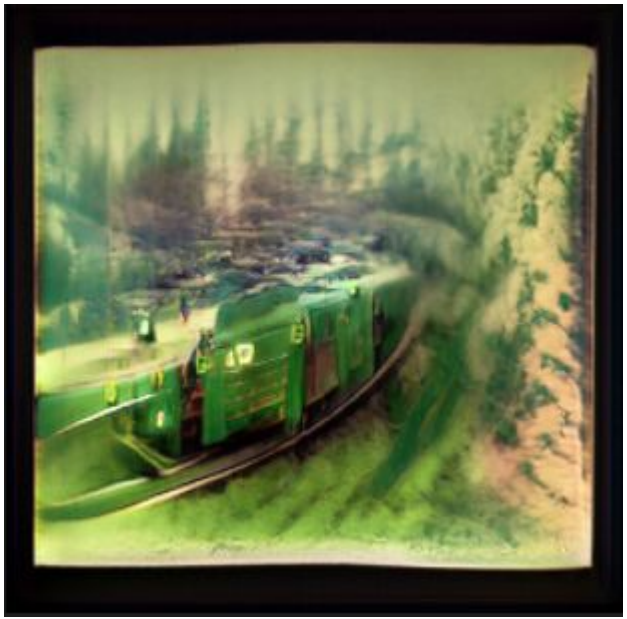
wasserstein distance

result

n_gen	n_eval	n_nds	mean_scores	max_scores
1	1000	76	26,99,37,-7,155	29,100,43,-2,164
2	2000	109	26,99,37,-7,157	30,100,47,-2,167
3	3000	128	27,99,38,-7,157	30,100,47,-2,167
4	4000	136	27,99,38,-7,157	30,100,51,-2,170
5	5000	156	27,99,38,-7,157	30,100,51,-2,170
6	6000	163	27,99,38,-7,157	30,100,51,-2,170
7	7000	179	27,99,38,-8,157	30,100,51,-2,170
8	8000	197	27,99,39,-8,157	30,100,51,-2,170
9	9000	219	27,99,39,-8,157	30,100,52,-2,170
10	10000	233	27,99,39,-8,157	30,100,53,-2,171
11	11000	249	27,99,39,-9,157	30,100,55,-2,171
12	12000	260	27,99,39,-9,157	30,100,55,-2,171
13	13000	261	27,99,39,-9,157	30,100,55,-2,171
14	14000	278	27,99,39,-9,157	30,100,55,-2,171
15	15000	282	27,99,39,-9,158	30,100,55,-2,171
16	16000	296	27,99,39,-9,158	30,100,55,-2,171
17	17000	308	27,99,40,-9,158	30,100,55,-2,171
18	18000	321	27,99,40,-9,158	30,100,56,-2,171
19	19000	328	27,99,40,-9,158	30,100,56,-2,171
20	20000	338	27,99,40,-10,158	30,100,56,-2,171
21	21000	357	27,99,40,-10,157	30,100,56,-2,171

wasserstein distance (multi-objective)





some thoughts

- higher mutation eta
- higher crossover eta
- less generation
- objective has some problems
- discriminator (✔)

result (single-objective)

```
mutation    : 50 (5)
crossover   : 30 (5)
pop_size    : 5000
generation  : 20
```

- higher mutation eta
- higher crossover eta
- less generation

a green train is coming down the tracks.