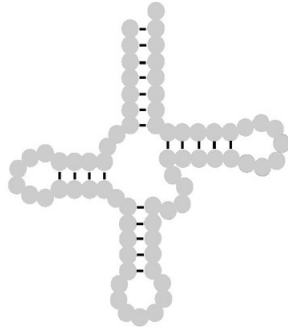


MC-Cons 2.0

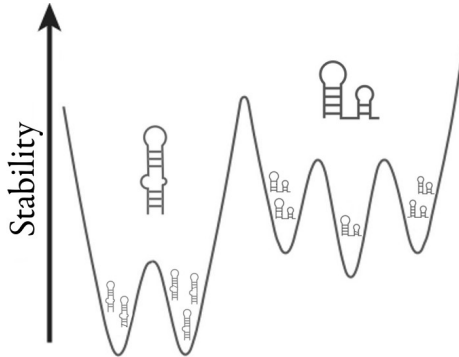
by
Gabriel Parent

introduction

I work with 2D structures


$$(((((((..(((.....))))),((((.....))))),....((((.....)))))))))))).$$

one RNA has many structures



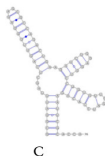
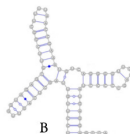
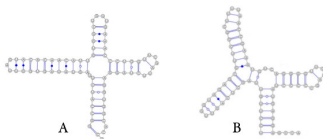
Function complexity and regulation through RNA dynamics
Dethoff EA et al., 2012, Nature

softwares predict structure

- ✦ MC-Fold
- ✦ mfold
- ✦ dozens of others

MC-Cons

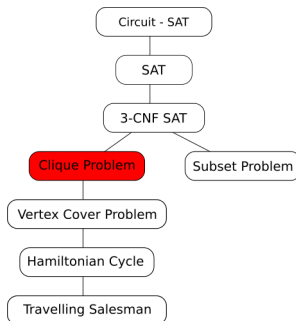
computational approach



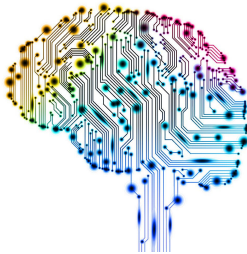
	A	B	C	D
A	0	5	3	4
B		0	3	4
C			0	2
D				0

score = 42

it is very hard!



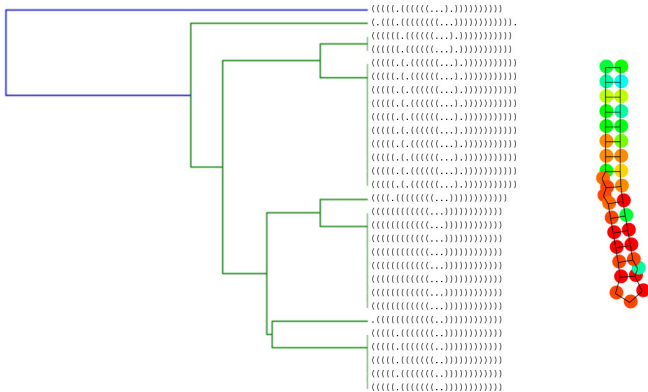
- result is the solution to max-clique
- exponential growth on input size



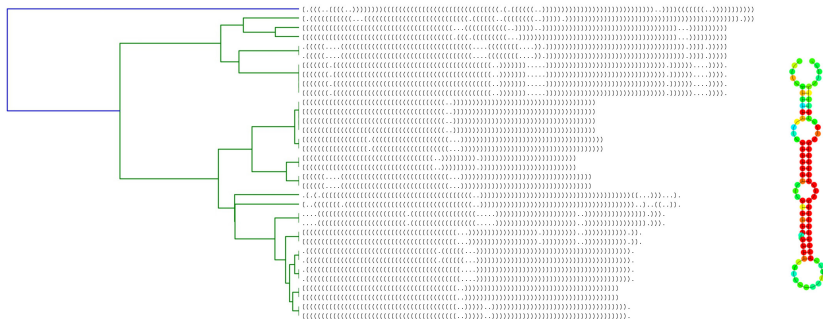
- ✦ hybrid genetic algorithm
- ✦ local search

results

toy example: IREs



example: microRNAs



conclusion

summary

MC-CONS



future work

- ✦ improved distance functions
- ✦ multi-objective optimization
- ✦ relevance feedback

questions

