

Research on algorithm for extending life based on social framework

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1 Introduction

"Longevity" is pursued by lots of people in all ages. And with the progress of science and technology, the pursuit of "longevity" is even more urgent. In order to find efficient ways to be in longevity. We propose algorithms based on social framework for extending life according to psychologist Susan Pinker's research^[1].

2 Model

According to the results of experts' research, the factors that can affect human life mainly include the factors shown in Figure 1.

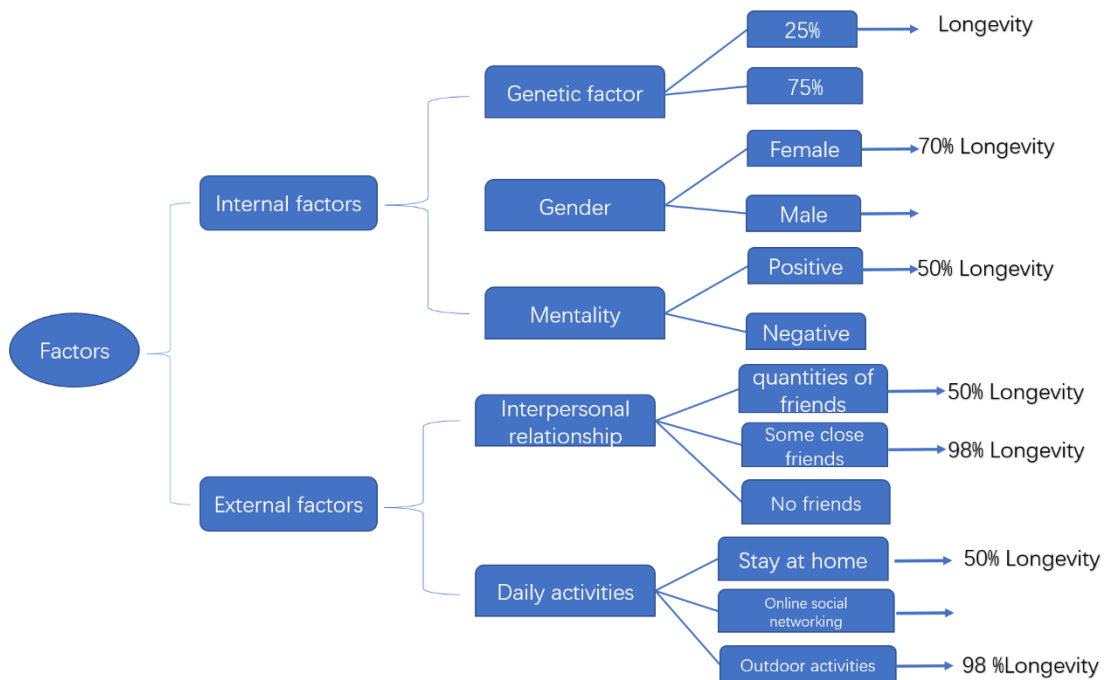


Figure 1: Factors affecting human life, the results are not indicated after the arrow, indicating that the factor has no or negative impact on life.

Based on the above factors and the resulting results, the problem is:

Agent: Human;

Action: Each factor in Figure 1 is an action;

Strategy: Define twelve strategies based on the twelve factors in Figure 1;

Reward: The action taken in the middle of the problem will not be rewarded, so it's recorded as 0. It's only rewarded in the final state, and the reward is equal to the corresponding percentage in the Figure 1 multiplied by 100, otherwise 0.

And we use the random function to select the action, then can get the following pseudo code.

```
Initialize  $S_0$ ,  $Q = 0$ ,  $\gamma = 1$ 

while S not the terminal state:

    state S, a=random(actions.index)

    updateQ(s,a):  $Q(s,a) \leftarrow R(s,a) + \gamma Q(s,a)$ 

end
```

In the end, we can get that people will live longer when they have one or two close friends and participate in outdoor activities.

3 Conclusion

Whether a person can live longer or not, genetics has a crucial role, but in addition, lifestyle choices are an important factor in longevity. The intimacy and social integration based on social framework have the strongest impact on the length of life. Intimacy is the close relationships with people that you can call on for a loan if you need money suddenly, who will call the doctor if you feel not well or who will sit with you if you are having an existential crisis. Social integration refers to how much interaction you have with others every day. It's not just the people you close to, but also strangers. In addition face-to-face conversations with people can release oxytocin and dopamine which can increase confidence, reduce cortisol, reduce stress, and increase emotional pleasure. So if you want to live longer, start it by enriching your social life.

Reference

[1] Susan Pinker .Social life may be the secret of longevity. Video from TED.