8.GM model simulation

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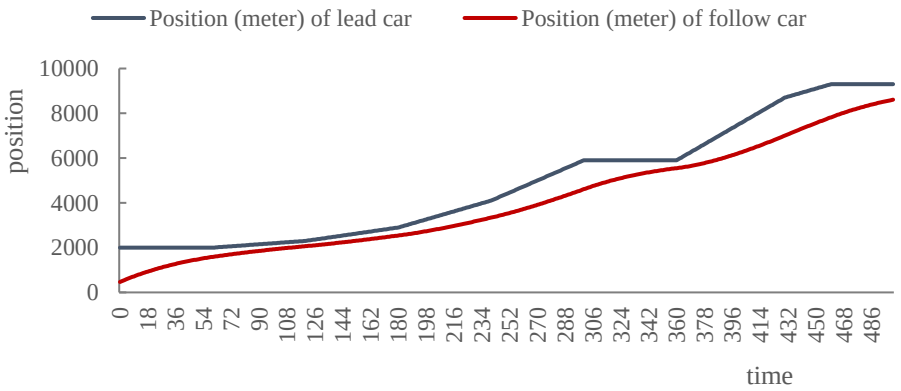
Use the spreadsheet to simulate the GM model
$\tau = 1s, \alpha = 0.8, m = 1, l = 1$
starting x = $467m$

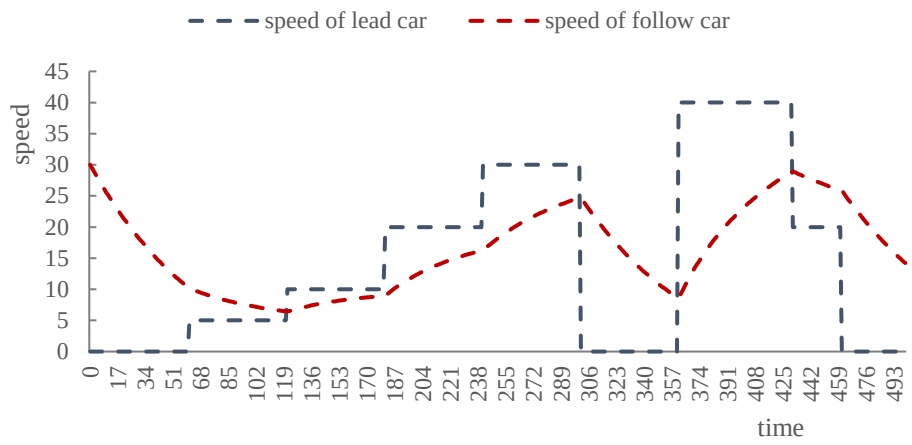
the speed of follow car is $30m/s^2$

输出 output 表（部分）：

Time (second)	Position (meter) of lead car	speed of lead car	Position (meter) of follow car	speed of follow car	acceleration
0	2000	0	467	30	0
1	2000	0	496.5303	29.53033	-0.46967
2	2000	0	525.5967	29.06632	-0.46401
3	2000	0	554.2046	28.60791	-0.45841
4	2000	0	582.3596	28.15506	-0.45285
5	2000	0	610.0673	27.70772	-0.44734
6	2000	0	637.3332	27.26584	-0.44187
7	2000	0	664.1626	26.82939	-0.43645
8	2000	0	690.5609	26.39831	-0.43108
9	2000	0	716.5334	25.97256	-0.42575
10	2000	0	742.0855	25.55209	-0.42047

仿真结果：





效果较好

代码：

```
1.  import pandas as pd
2.
3.  datas = pd.read_excel('Lead+car+data.xlsx')
4.
5.  for i in range(0,500):
6.
7.      dv = datas.iloc[i,2]-datas.iloc[i,4]
8.      dx = datas.iloc[i,1]-datas.iloc[i,3]
9.      datas.iloc[i+1,5] = 0.8*datas.iloc[i,4]*dv/dx
10. #     datas.iloc[i+1,5] = 0.8*dv/dx
11.
12.     datas.iloc[i+1,4] = max(0,datas.iloc[i,4]+datas.iloc[i+1,5])
13.     datas.iloc[i+1,3] = datas.iloc[i,3]+datas.iloc[i+1,4]
14.
15. datas.to_excel('output.xlsx',index  =False)
```