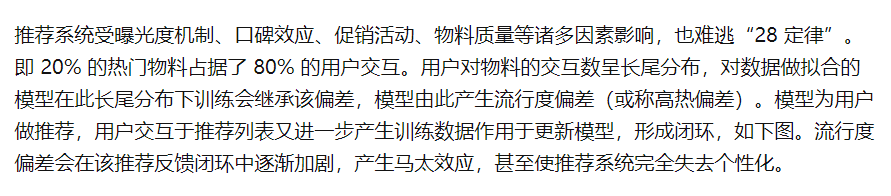
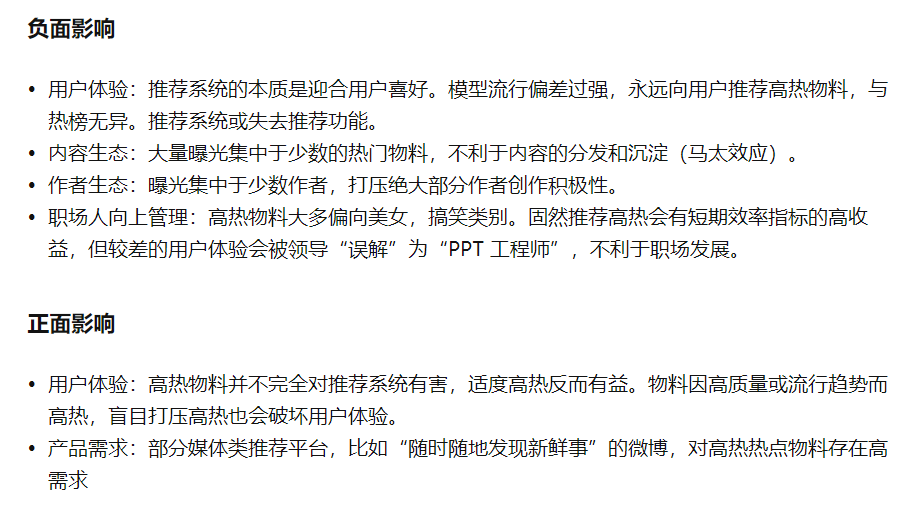
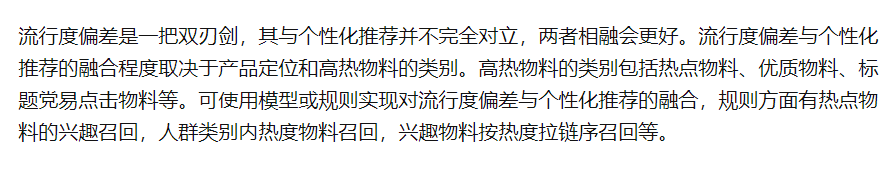
一、基本概念

1.长尾分布和马太效应



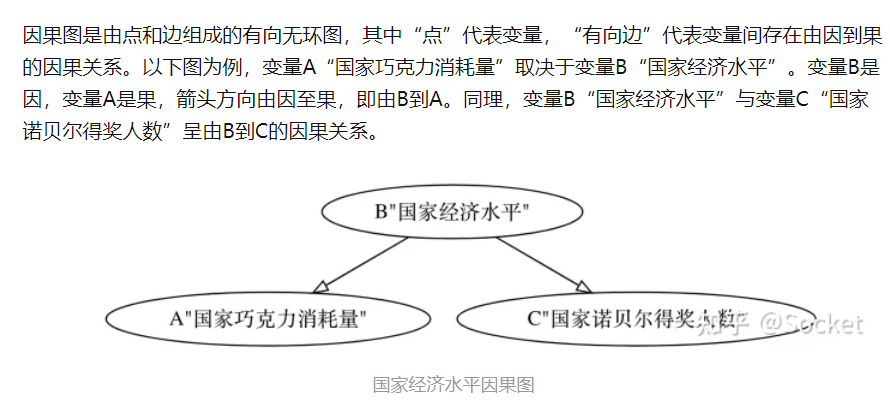
2.流行度偏差的正反面



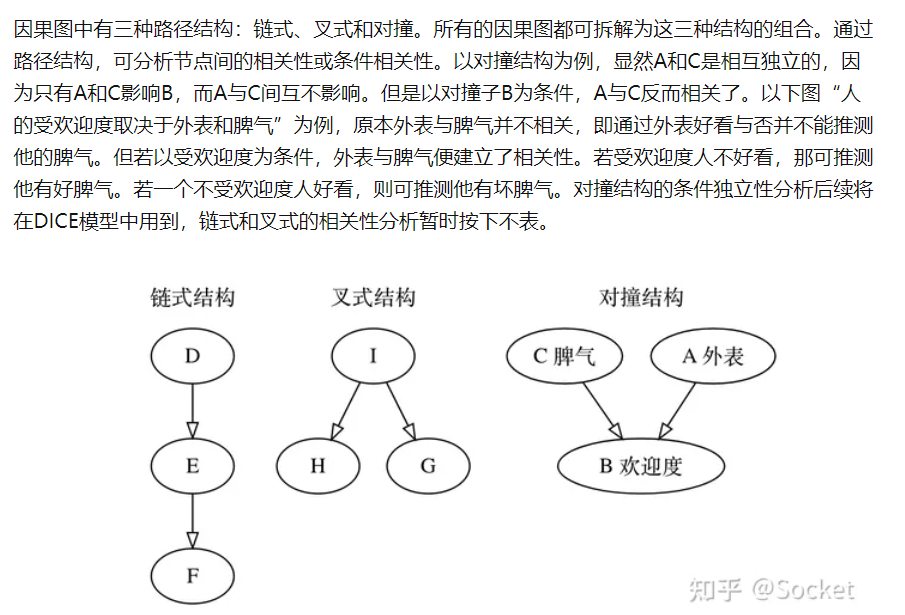


二、推荐系统中的因果推断

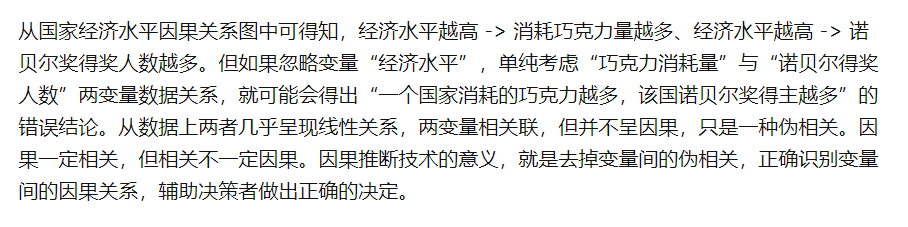
1.因果图的定义



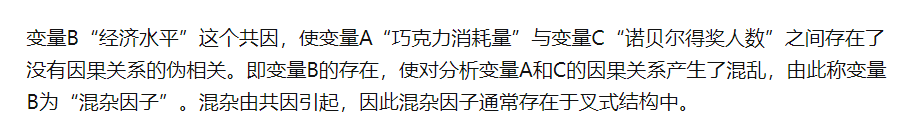
2.因果图结构



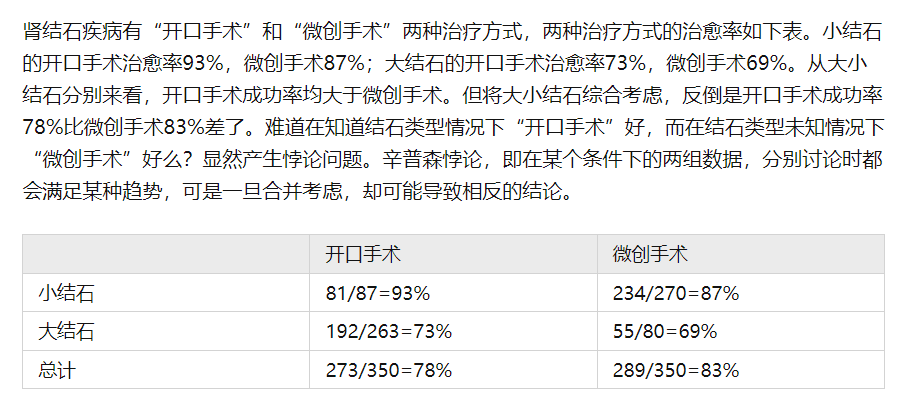
3.因果 VS 关联

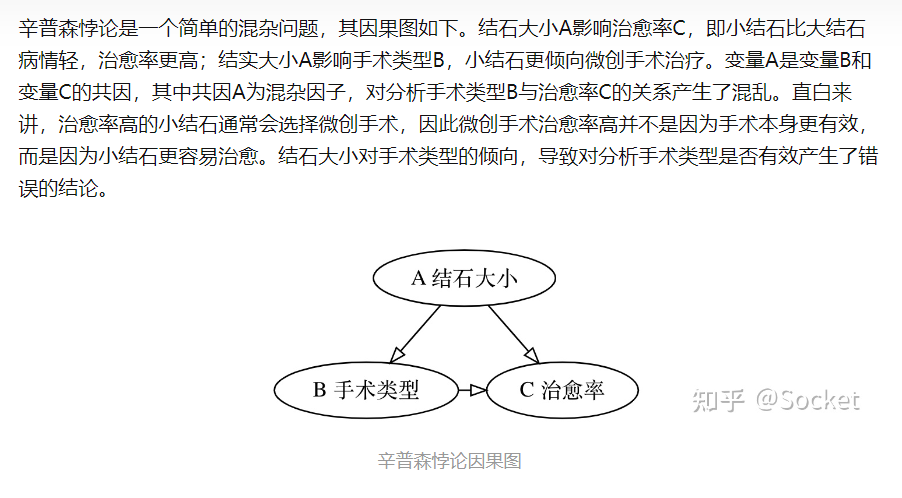


4.混杂因子

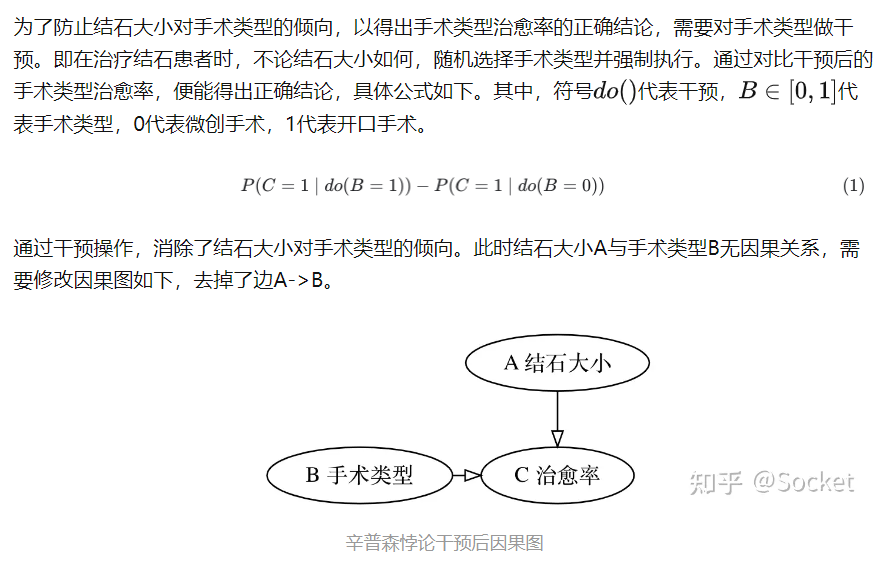


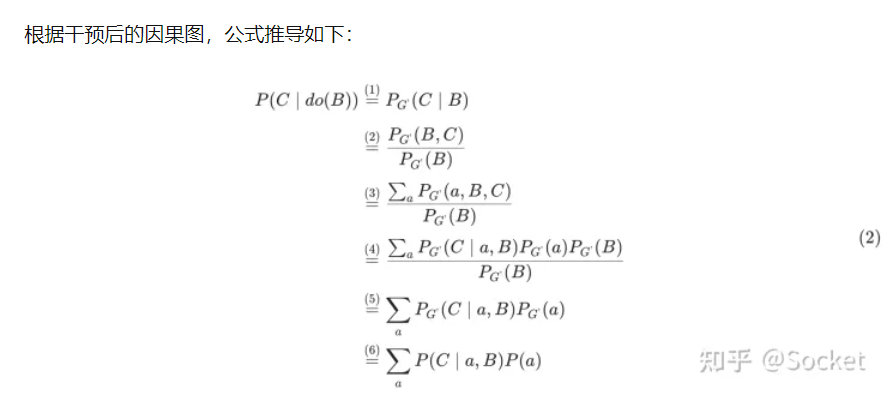
混杂示例：辛普森悖论

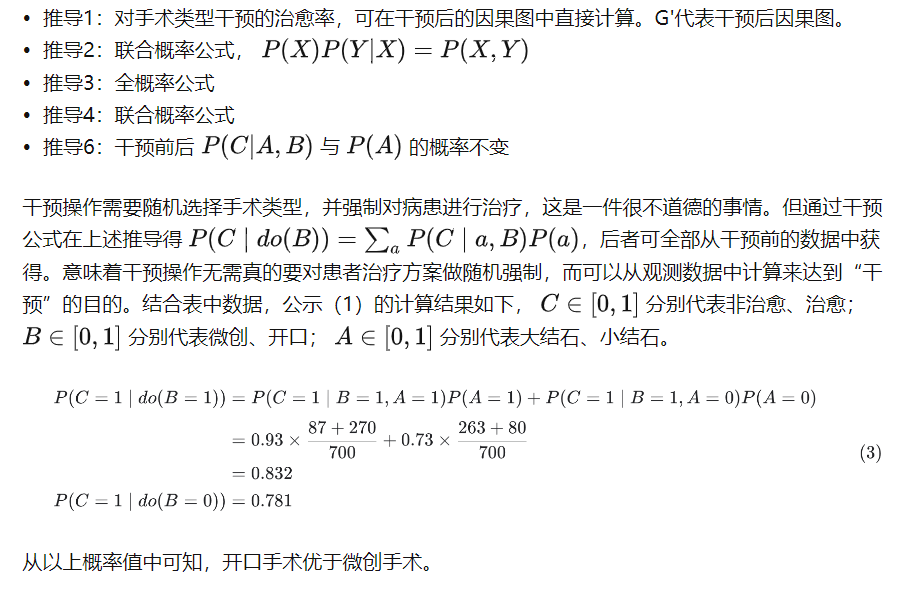


9

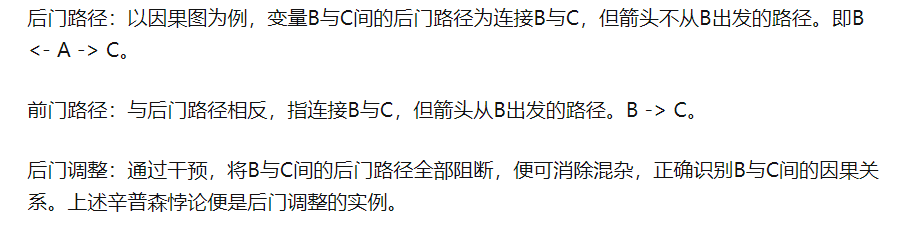
5.干预



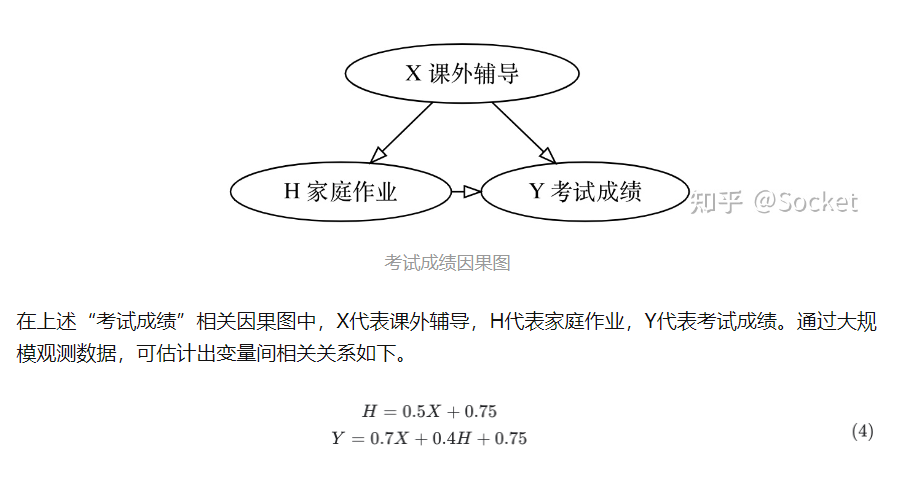


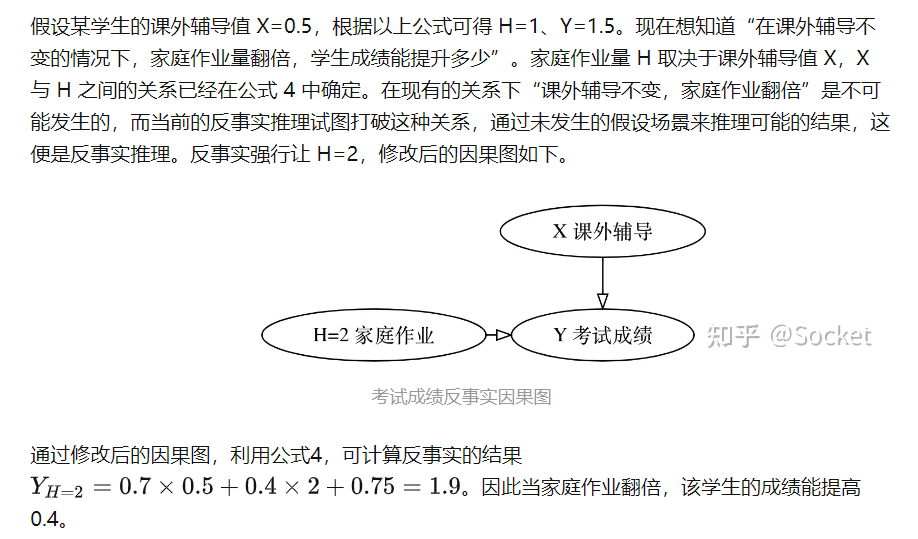


6.后门调整

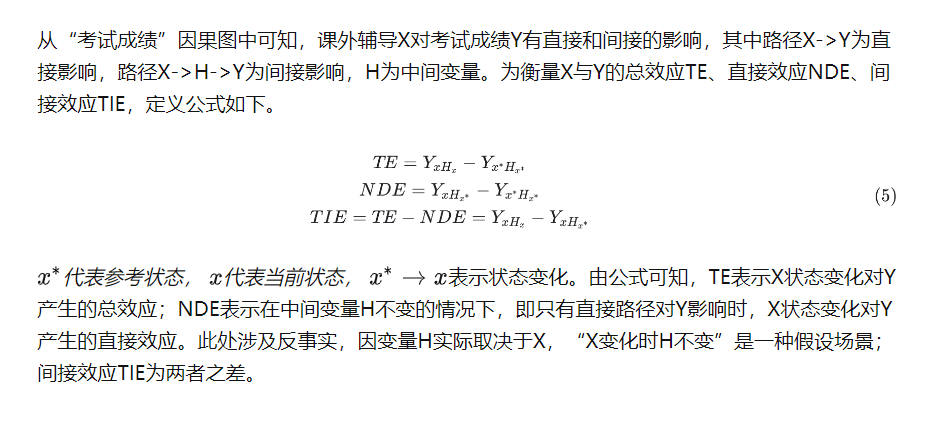


7.反事实

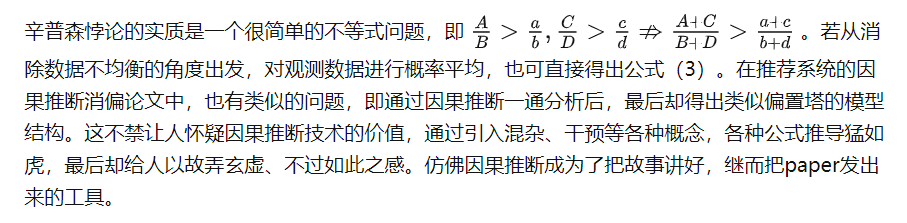




8.TE、NDE、TIE

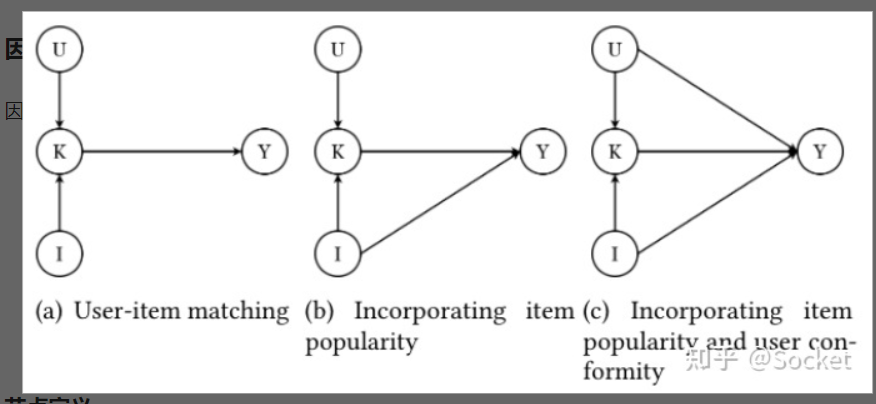


9.机器学习中的因果推断

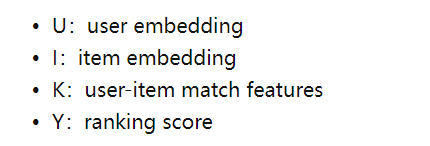


三、MACR模型

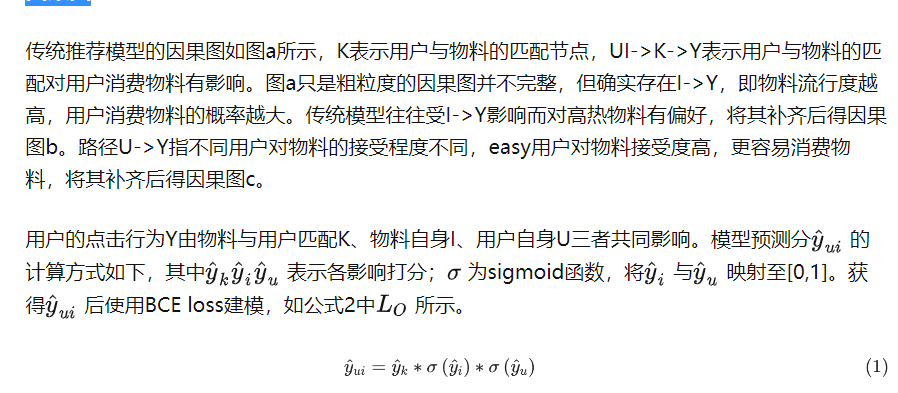
1.因果图

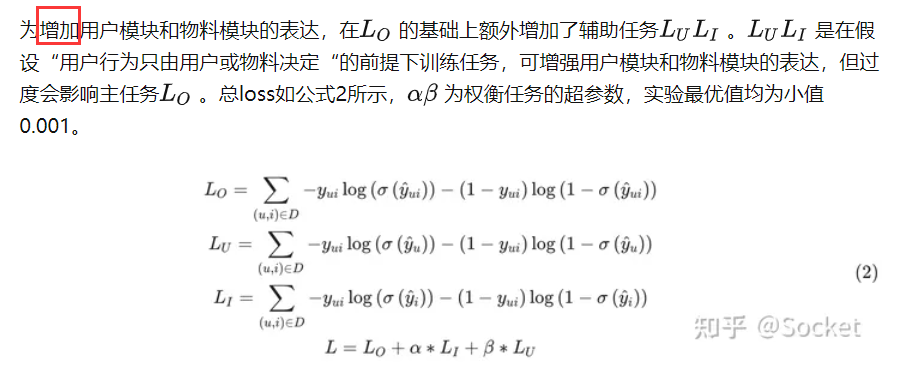


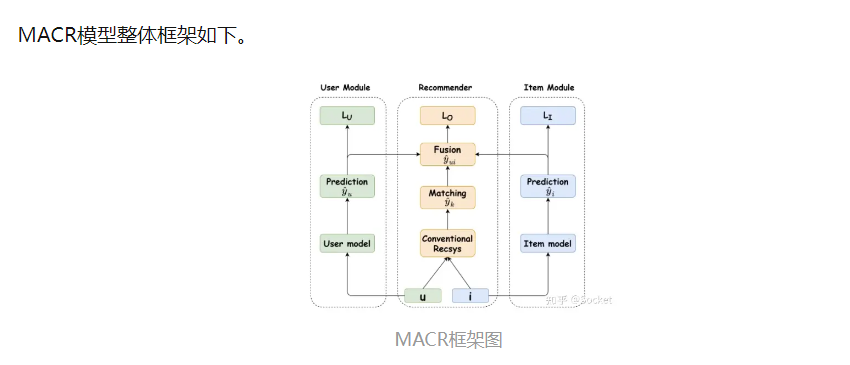
2.节点定义



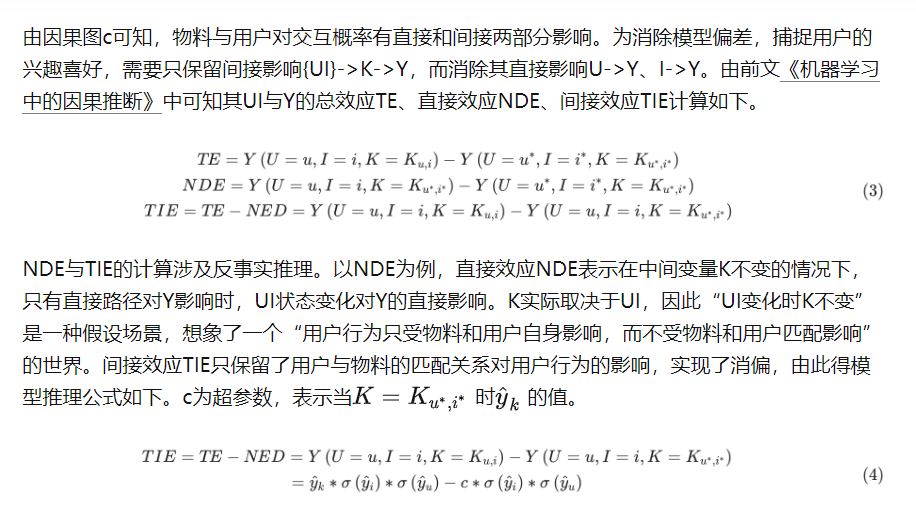
3.因果图



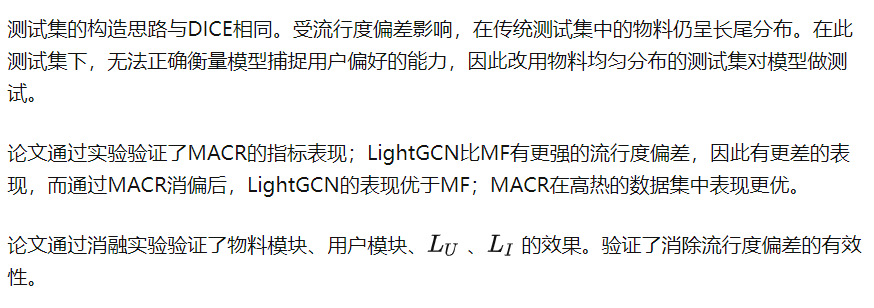




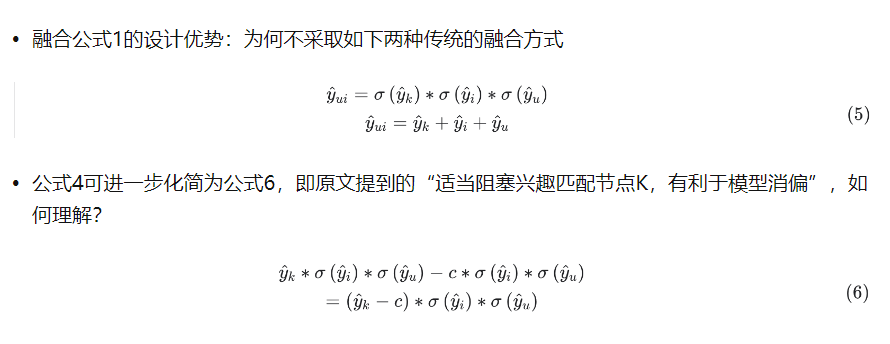
3.反事实推理

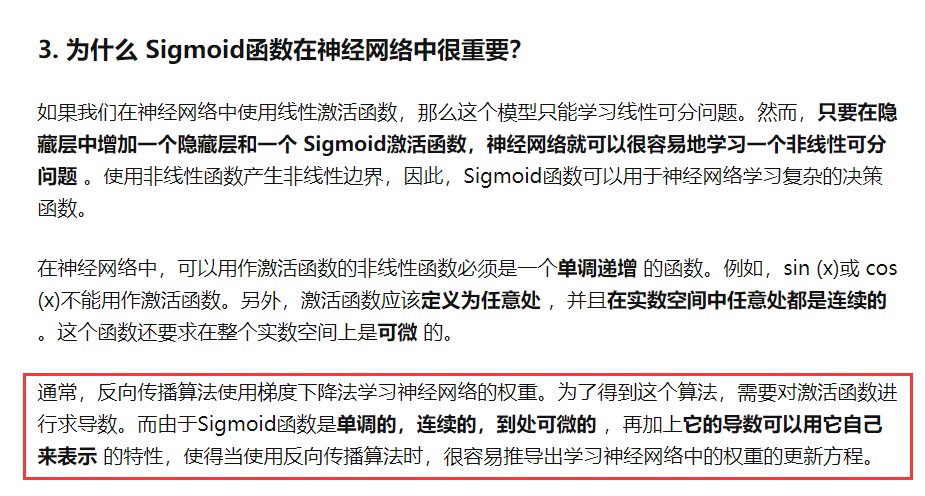


4.实验



5.问题







四、MACR代码分析