# Idiot board

Now I will explain the analysis and results of AHP.

In general, first of all, we need to establish a pairwise comparison matrix, use Matlab to calculate the weight vector, and then check the matrix consistency, and finally calculate the weighted average according to the weight vector, and perform the segmentation of the mental state level of the used users.

According to the questionnaire, the four main factors affecting the mental state of college students are: study and research, interpersonal communication, sleep quality and eating habits

Then score according to the criteria on the PPT page.

The four factors are compared pairwise with each other to determine the degree of importance, and finally form a pairwise comparison matrix of 4\*4.

Finally, AHP algorithm is used to evaluate and make decisions, and the weight vector is obtained by running the code in Matlab compilation environment. These four values represent the proportion of the four influencing factors.

It can be seen that study and research have the biggest impact, followed by sleep.

For the pairwise comparison matrix we just set, in order to ensure its logical rigor and avoid contradictory comparisons, consistency tests should be carried out.

By calculating the consistency ratio (CR), the consistency degree of the judgment matrix is judged. The closer the consistency ratio is to 0, the better the consistency of the judgment matrix is. When the consistency ratio exceeds 0.1, it indicates that the consistency of the judgment matrix may be problematic. By calculating the value of our matrix CR to 0.0039, it means that the matrix is very accurate.

We scored the influence degree of each user in 95 samples of the survey based on four influencing factors, and calculated the comprehensive score of each user's mental state by weighted average using the weights obtained by AHP.

These samples were then divided into four grades according to the comprehensive scores of different mental states, which were excellent, good, average and poor. It can be seen from the statistical table that the students with poor mental state are still in the minority. Therefore, the mental state of college students is generally good.

# 提词板：

下面由我来讲解AHP的分析和结论部分。

总的来说，首先我们要建立两两比较矩阵，使用Matlab运行计算权重向量，然后检查矩阵一致性，最后根据得出的权重向量进行加权平均计算，对所用用户进行精神状态等级的分段。

根据调查问卷整理出对大学生精神状态主要的四个影响因素分别是：学习和研究、人际交往、睡眠质量、饮食习惯

然后根据PPT页面上的标准进行判分。

四个因素互相之间两两进行比较，确定重要程度，最终形成4\*4的两两比较矩阵。

最后使用AHP算法进行评价与决策，在Matlab编译环境下运行代码，得出权重向量；这四个值就分别代表四个影响因素所占的比重。

可以看出，学习与研究方面影响最大，其次是睡眠。

对于我们刚刚设置的两两比较矩阵，为了确保其逻辑的严谨性，避免矛盾的比较，要进行一致性检验。

通过计算一致性比率（CR），判断判断矩阵的一致性程度。一致性比率越接近0，表示判断矩阵的一致性越好；一致性比率超过0.1时，表示判断矩阵的一致性可能存在问题。通过计算我们的矩阵CR值为0.0039，表示矩阵十分准确。

我们根据四个影响因素对调查的95个样本的每个用户的影响程度进行打分，并利用AHP得出的权重进行加权平均计算出每个用户精神状态的综合评分。

然后根据不同的精神状态综合评分将这些样本分为四个等级，分别是优秀、良好、一般、差。从统计表中可以看出精神状态差的同学还是占少数的。所以，大学生精神状态普遍良好。