软件定位

本软件的定位为跨平台教学软件，目标用户为对粒子滤波及相关算法有教学和学习需求的教师和学生。

对于教师用户，该软件需要提供展示功能，教师可以通过选择算法类型和数据来源对想要教学的算法进行展示，此处为了便于操作，应该在软件内预存输入范例，运行后能获得可视化输出，并可以修改参数重新运行并前后对比，展示参数改变对于算法输出的影响。

同样，对于学生用户，该软件应该提供选择算法类型和输入数据的功能，让学生能够自主选择算法运行方式，运行结束后能够有和教师用户一样的修改参数，前后对比的功能。对于初次使用本软件的学生用户，还应该有相应的教学和帮助文档，对算法进行简单的阐述并说明本软件的使用方法。

为了方便学生用户提交输出，交作业等可能产生的需求，本软件应提供数据和图像的导出功能。

介于该软件的用户可能使用不同类型，不同版本的操作系统，本软件的平台支持初步考虑Windows 7及之后的Windows操作系统，主流 Mac OS 系统和主流Linux系统，便于使用不同操作系统的用户使用。

在该软件的后续版本中可能会加入对于使用Android和iOS系统的平板的支持，但是由于开发成本和开发周期的限制，在软件结构设计及语言选择中暂不考虑该需求。

Software positioning

The software is positioned as a cross-platform teaching software. Targeted users are teachers and students who have a teaching and learning requirements for particle filtering and related algorithms.

For teacher users, the software needs to provide the display function. Teachers can display the algorithm they want to teach by selecting the algorithm type and data source. In order to facilitate the operation, a sample of the input should be stored in the software and the visual output can be obtained after running. And teacher can modify the parameters to re-run then get comparison for showing the impact of parameter’s change on the output of the algorithm.

Similarly, for student users, the software should provide the access to select the type of algorithm and input data, allowing students to choose how the algorithm is to run and, at the end of the run, have the same ability to modify parameters and make comparation, as the teacher user does. For new student users, there should be teaching and help documentation, to explain the algorithm and guide of the software.

As student users may need to submit the output, homework or other possible needs, the software should provide data and image export function.

In addition, for someone use this program to learn particle filter, help documentation and algorithm explaining are required. With this program, they can do a step-by-step self-study then make some progress.

As the software users may use different types and versions of the operating system, the software is required to support Windows 7 and later Windows operating system, mainstream Mac OS system and mainstream Linux system.

Future versions of the software may include support for mobile platform using Android or iOS, but due to the limitation of developing cost and time, this requirement is not considered in software design and language selection.