Dear Prof Song，

非常感谢你的建议，我会根据你的建议进行接下来的学习。我对于具体每条建议的反馈如下：

对于建议1，我也意识到了你所说的问题。我会尽量用较短的时间去完成必要的foundation学习，然后将精力拉回到ADSP上。

对于建议2，Tutorial outline上所剩下没有实现的内容，实际上已经不多了。具体是Kalman Filters（State-space， EFK，UFK），Particle Filter，LMS，RLS。而且，根据已有的库去自行封装一个函数是一件很省事的事情。所以并未着急去做。书中，例如HMM，它给出了较为严格的推导。却一字未提，如何在信号降噪上进行使用。我是不是应该去找使用HMM去Denoising的经典高引用论文，并在阅读论文，复现代码时，加深对HMM使用的理解。并充实我们的Tutorial（高引论文的算法）？

对于建议3，你给的建议是很有启发的。我会按照你的给的建议进行整理，尤其是DSP相关的算法。我以后每周固定花一个下午，对一周的学习进行记录和整理。

对于建议4，你对于毕业论文的建议。其中的a和b选项分别是过去两个月中，我和一达做的事情。关于a，我有一些些担忧，因为我是软件工程专业的学生，我做的xxxx，是否满足要求。我需要和谢老师相讨论一下。你给的c选项，我会去找一下综述文章并阅读的。

在下次汇报之前，我会将将现有Tutorial Outline上的内容完成（1 Academic signals generation， 2 Noise reduction and signal reconstruction）。但是在十一月前，还是要花不少时间在专业课的学习上（信号与系统，数字信号处理）。其中有价值的部分，我也会按照你建议3，整理好，上传至Tutorial。

还有你所说的，code on simulating SCG with resonance noises。是不是最后一次汇报时提到的，使用acf去进行相关周期探测？当初时间太过匆忙，我只是观测到了这个现象，便提了一嘴，而没有真正的去进行提取。当初的代码是这个

<https://github.com/A-Big-Tortoise/NRSR_Research/blob/main/Code/Week8/Segmentation.ipynb>

Dear Prof. Song,

Thank you very much for your detailed advice. I will follow your suggestions for my future studies. Here is my feedback on each of your advice:

1. Regarding your first suggestion, I am aware of the issues you mentioned. I will try to complete the necessary foundational studies in a much shorter time and then refocus my efforts on ADSP.

2. For your second suggestion, there is not much left to implement in the Tutorial outline. Specifically, I still need to implement Kalman Filters (State-space, EFK, UFK), Particle Filter, LMS, and RLS.

My question is, in the book "Advanced Digital Signal Processing and Noise Reduction," for example, HMM provides a rigorous derivation but does not mention how to use it for signal denoising. Should I search for highly cited papers that utilize HMM for denoising, deepen my comprehension of HMM while studying these papers, and improve our Tutorial by incorporating algorithms from these well-cited papers?

3. Concerning your third suggestion, your advice is enlightening. I will follow your suggestions, especially concerning DSP-related algorithms. Going forward, I will dedicate one afternoon each week to document and organize my learning from the week.

4. Regarding your suggestions for my thesis, options a and b represent what Yida and I have been working on in the past two months. About option a, I have some concerns because I am a software engineering student, and what I do (option a) may not meet the requirements. I need to discuss this with Professor Xie. For option c, I will search for review articles and read them.

Before the next progress report, I will complete the content outlined in the existing Tutorial (1 Academic signals generation, 2 Noise reduction, and signal reconstruction). However, until November, I will still need to spend much time on major courses (Signals and Systems, Digital Signal Processing). I will also organize the valuable parts, as per your suggestion 3, and upload them to the Tutorial.

As for your mention of simulating SCG with resonance noises, I assume this relates to what we discussed in the last progress report about using ACF for periodic detection. At that time, I rushed and only observed this phenomenon without extracting it properly. The initial code for this can be found here:

https://github.com/A-Big-Tortoise/NRSR\_Research/blob/main/Code/Week8/Segmentation.ipynb.

Thanks again for your detailed guidance!

Sincerely,

Jiayu Chen