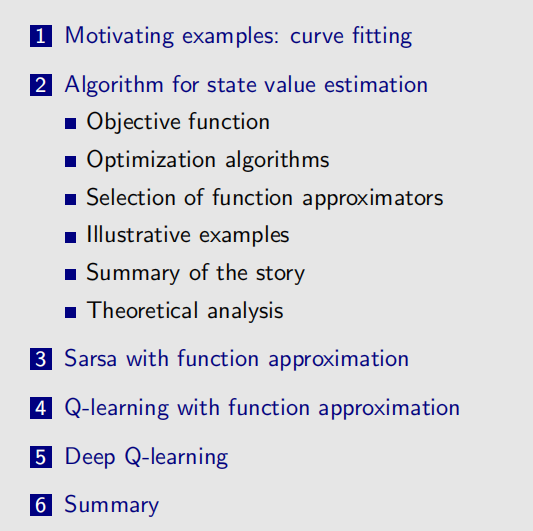
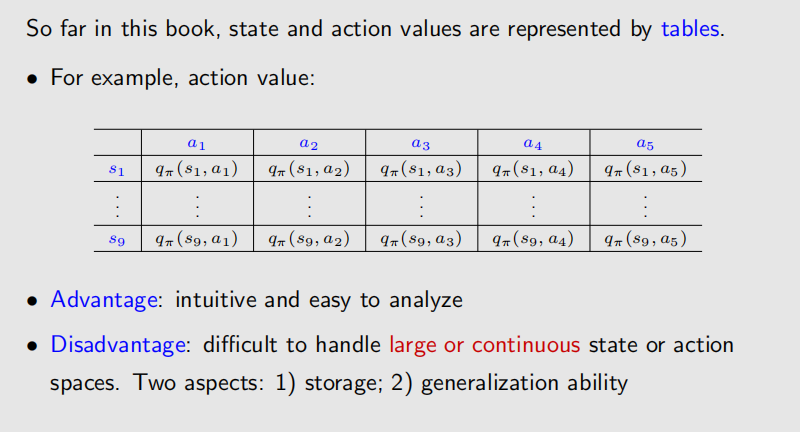
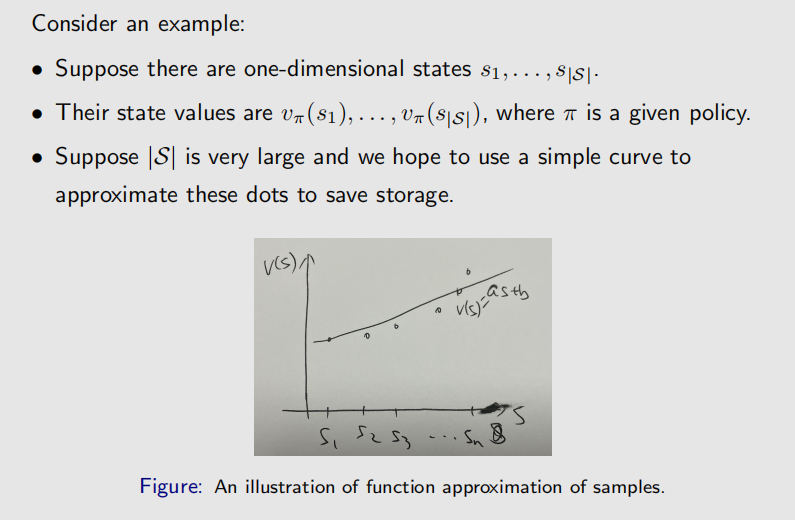
VFA

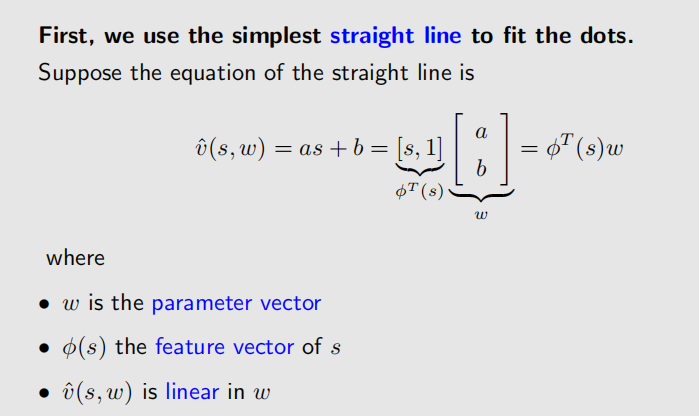
本次课开始介绍VFA（Value Function Approximation）

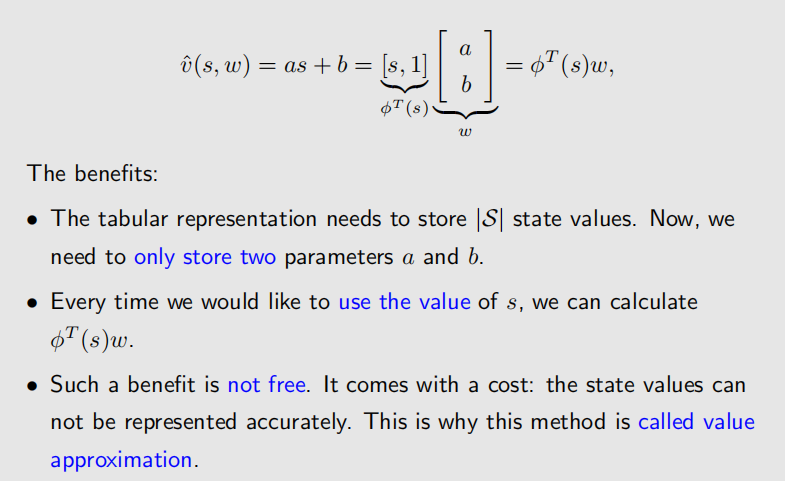
以下是内容概述：

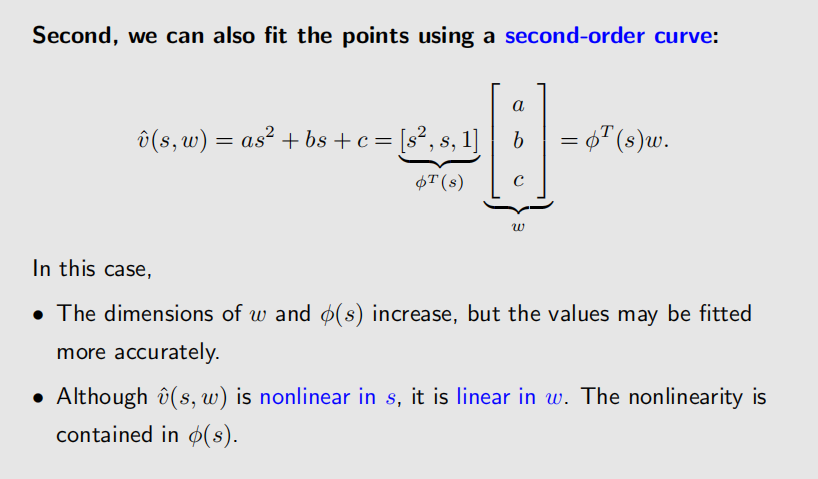


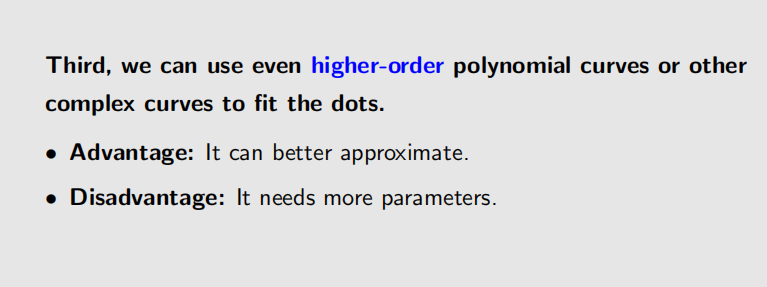


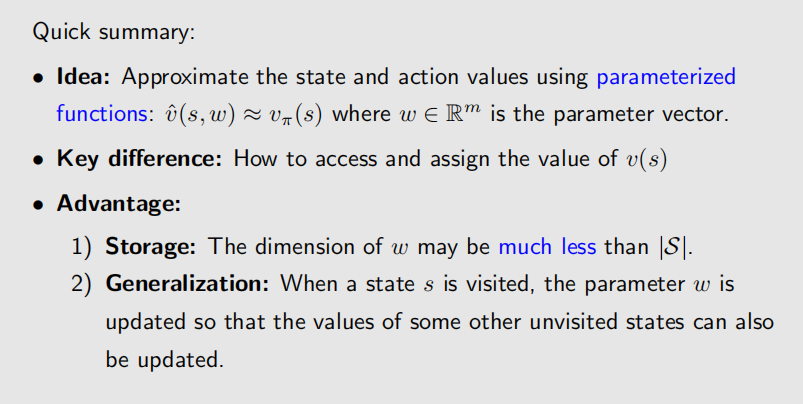




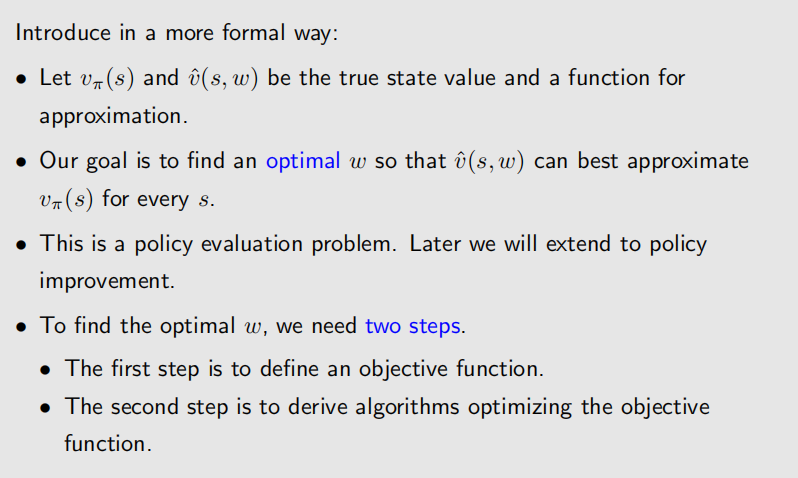


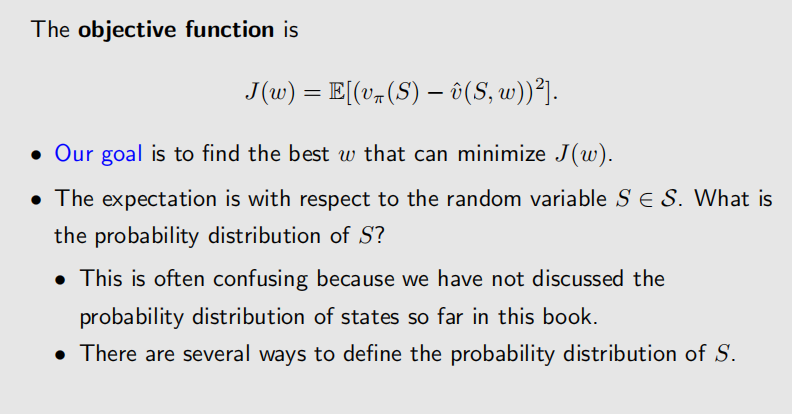


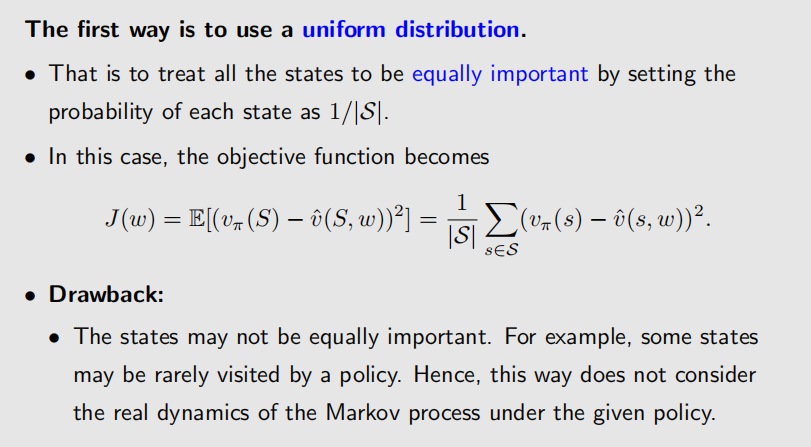


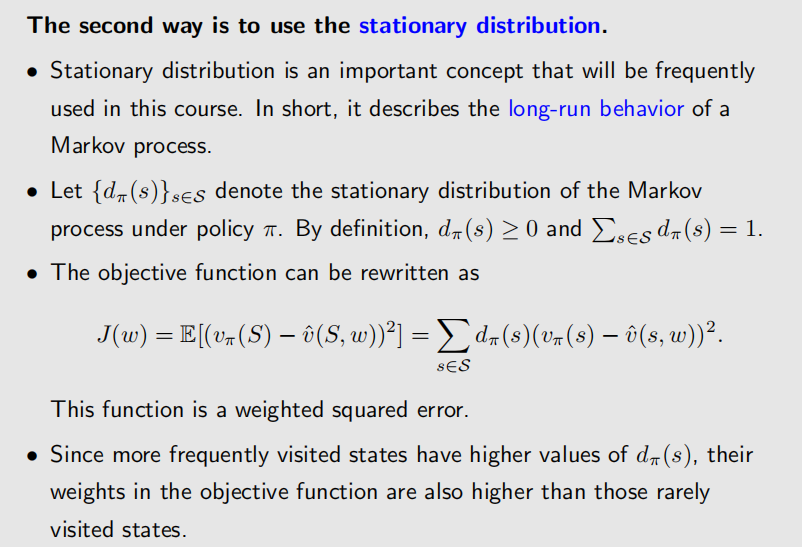


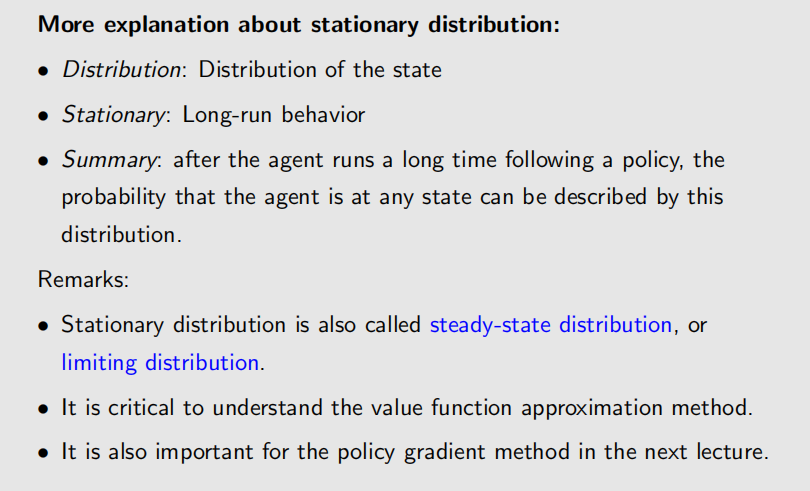
Objective Function：

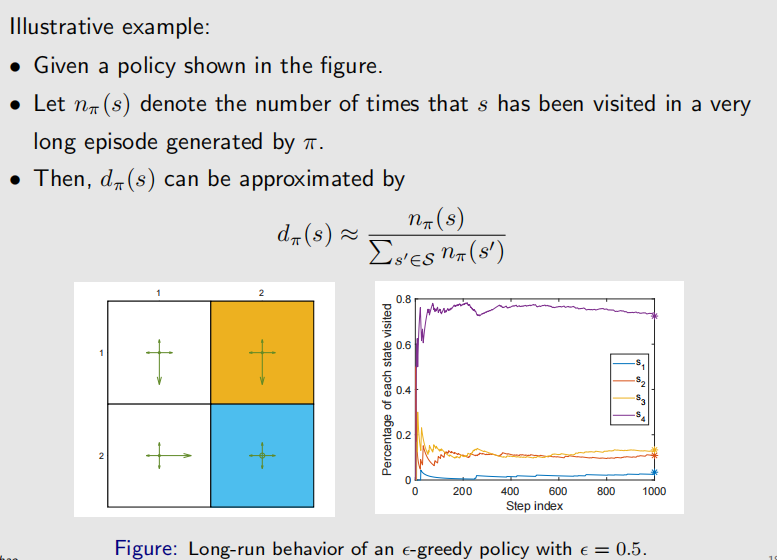


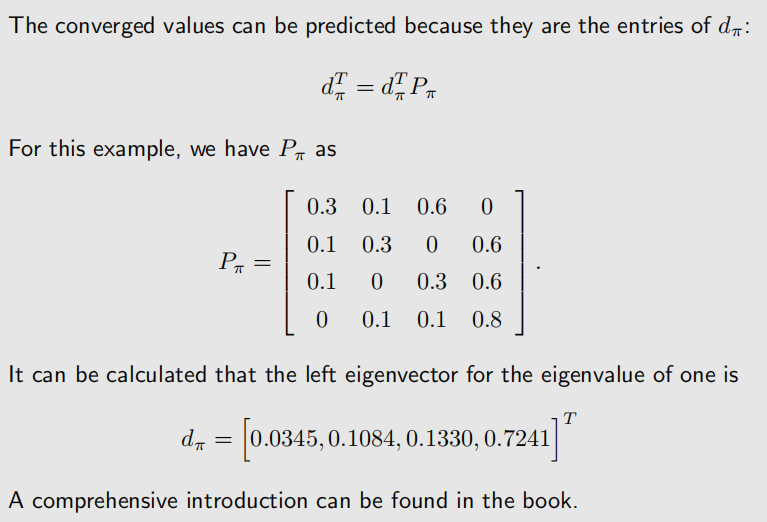


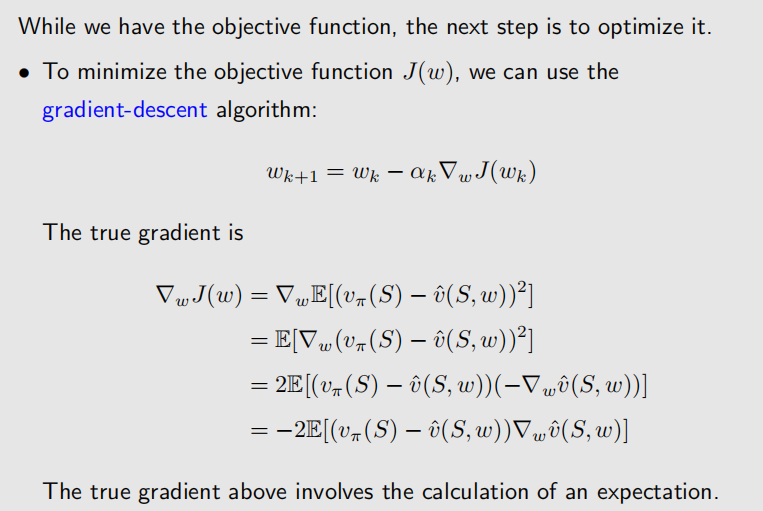


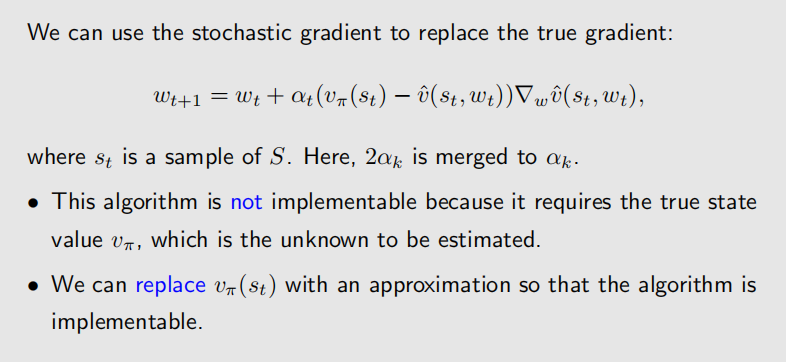


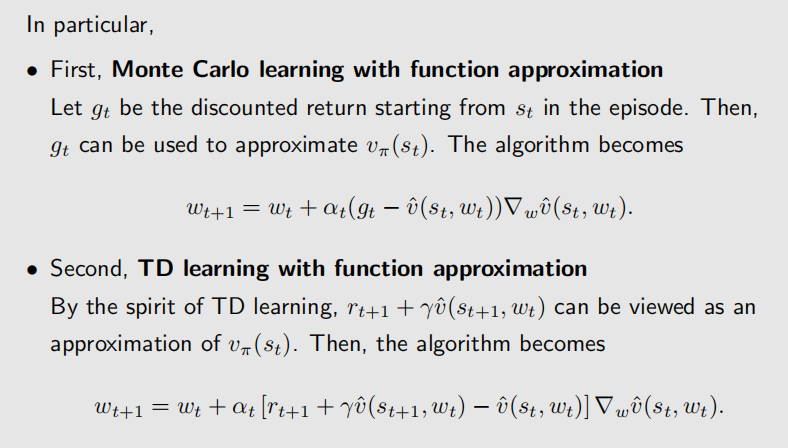


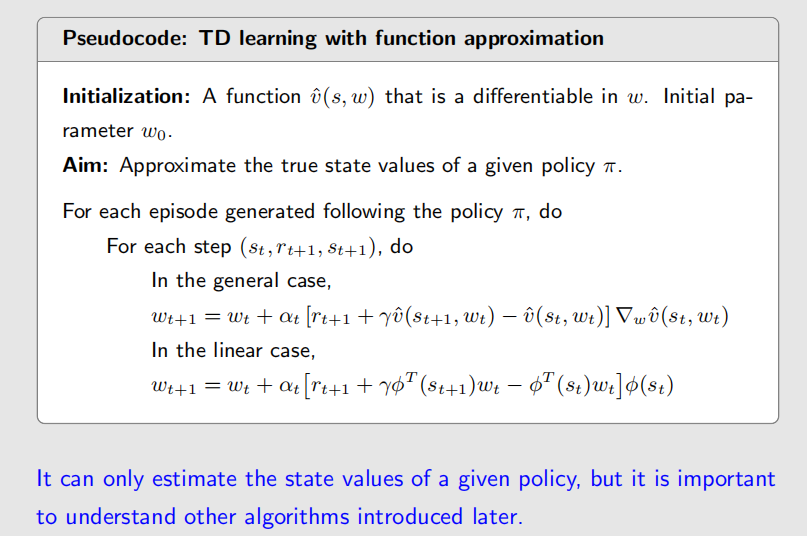


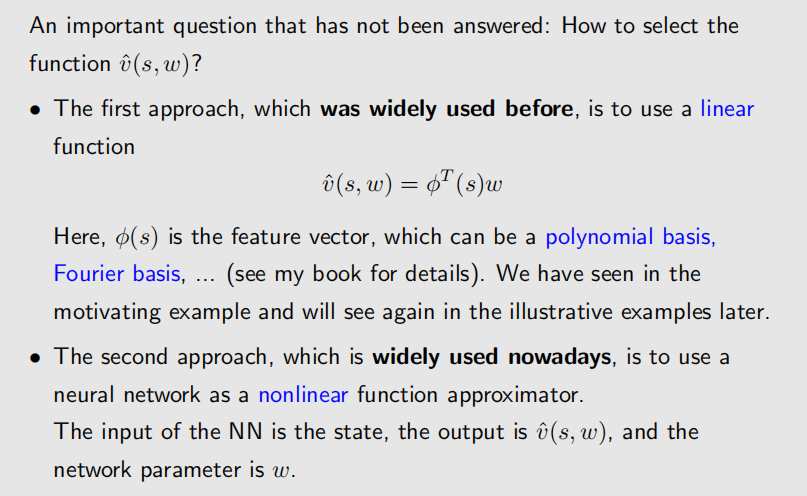


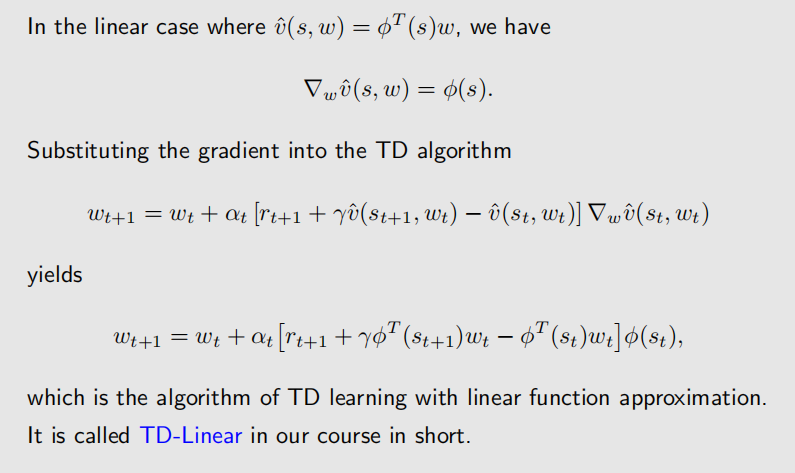


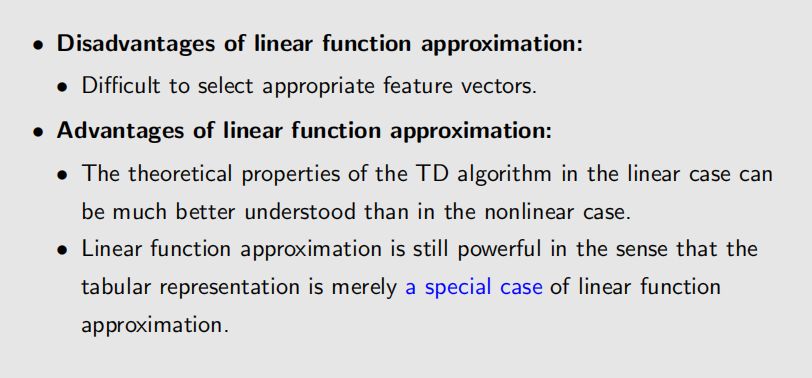












这里面简单介绍一下传统深度学习和现代深度学习的区别。

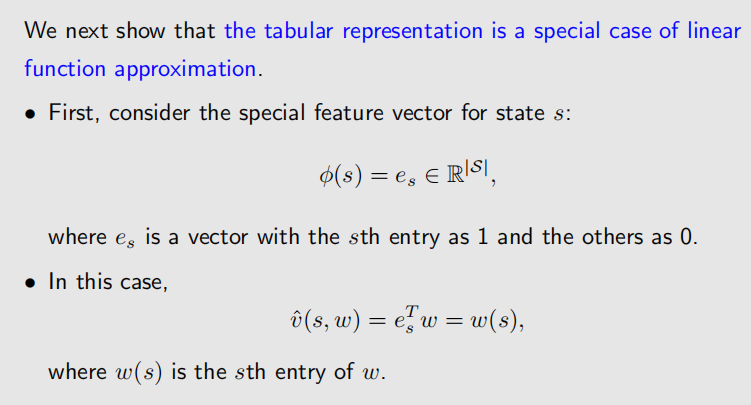
Transformer是一个重要的分水岭。《attention is all you need》。2017.

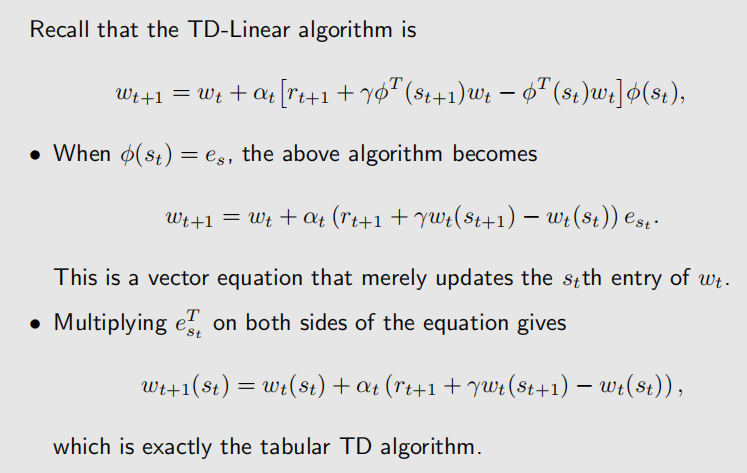
现代深度学习：Transformer+海量数据+大规模计算。

一个重要的理论：缩放定律。简单理解：放大规模会带来性能提升。2018年的重要成果之一：《Scaling Laws for Neural Language Models》。2020.从此人工智能进入了“大力出奇迹”的时代，从此很多实验室的老师被大厂研究院推到了墙角，焦虑情绪开始蔓延。人工智能的前沿创新有了新的变化。

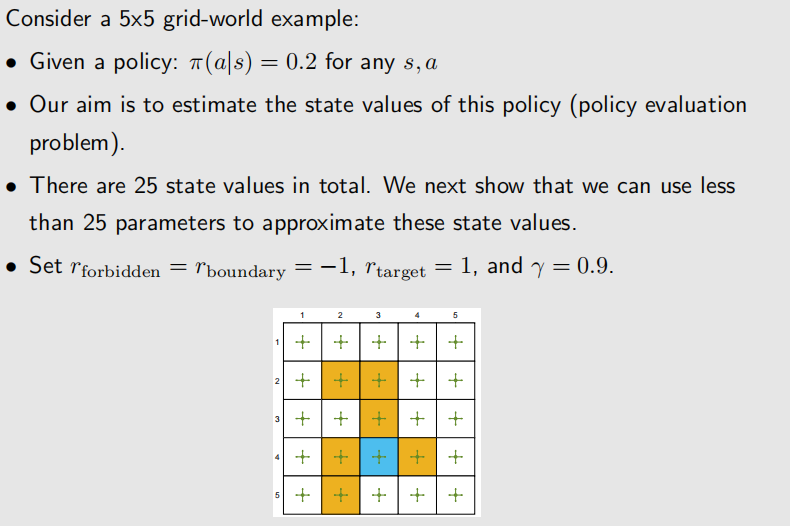
神经语言模型的缩放规律研究出现了很多新的领域。

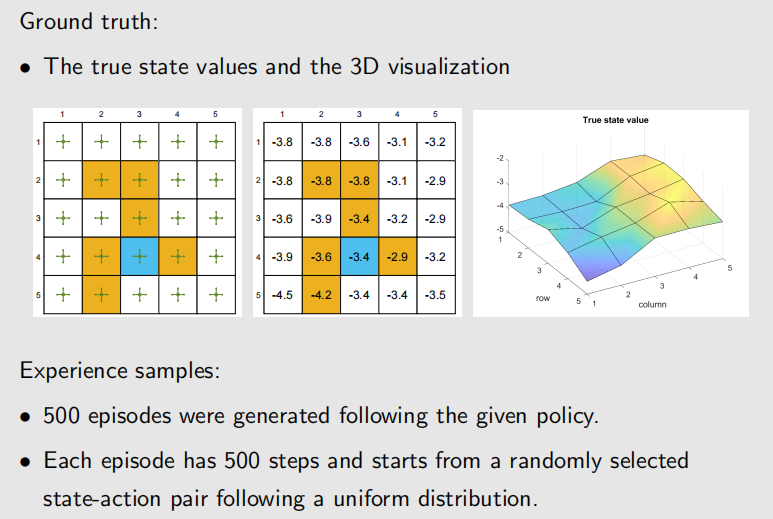
总结一下：Transformer的出现从多个方面对于传统深度学习做了拓展，1.参数规模爆炸式发展。2.数据规模和数据质量并重。3.预训练结合微调代替了传统的数据标注依赖（监督学习）。4.计算资源需要暴增，单个GPU无法满足训练要求，推动人工智能进入算力时代（暴力时代）。5.从单一领域的应用走向通用多模态。6.对于Transfomer的扩展成为了研究的重点，网络架构实现了初步统一。

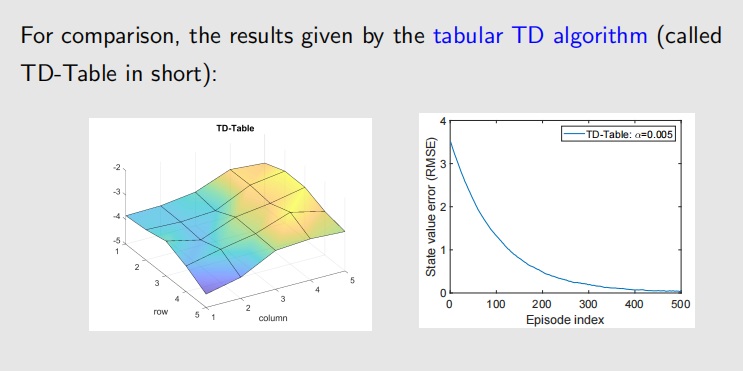


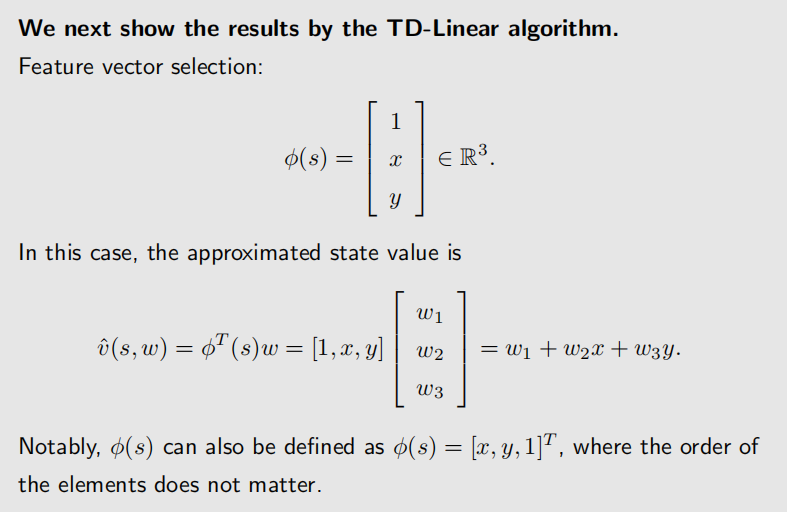


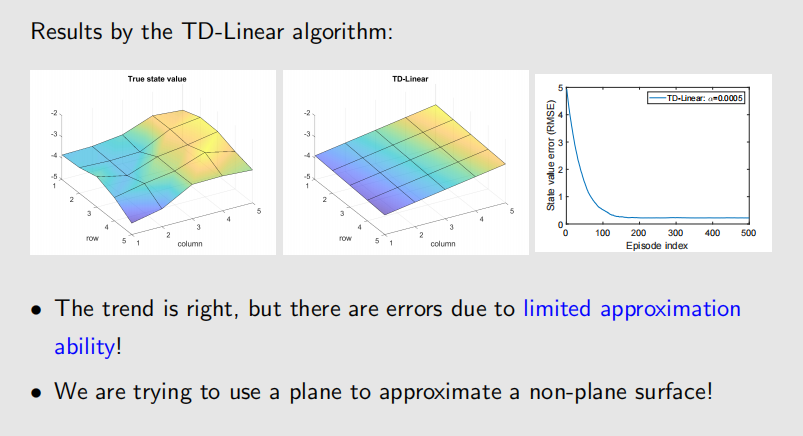
examples：

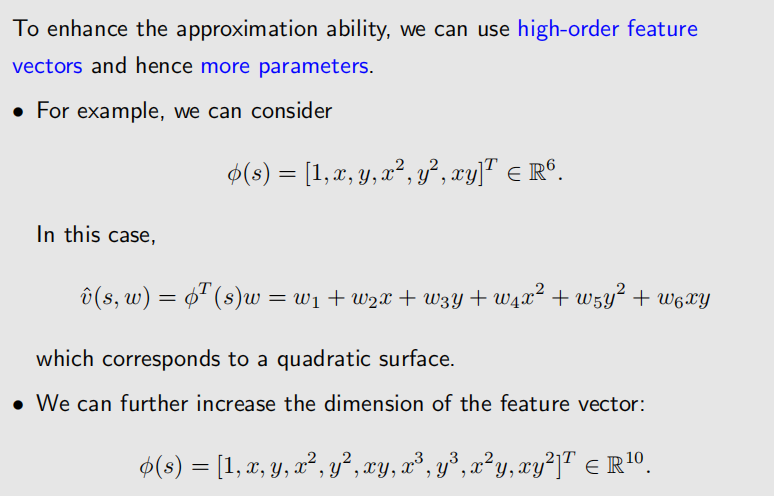


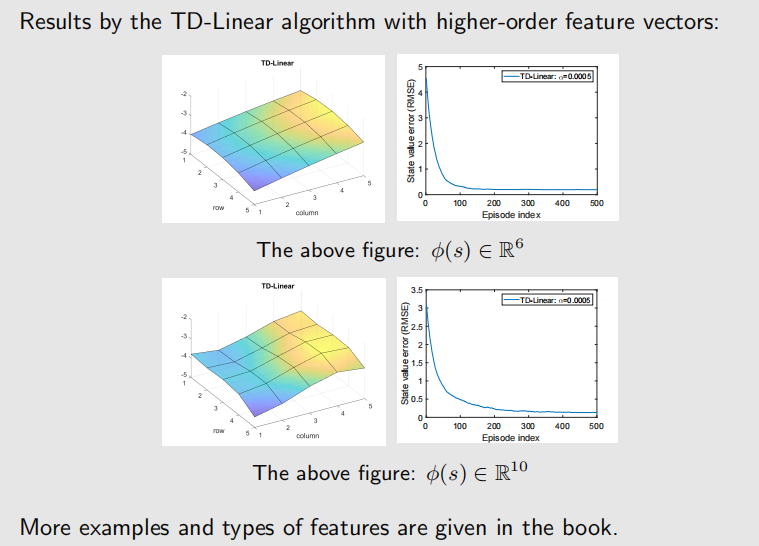




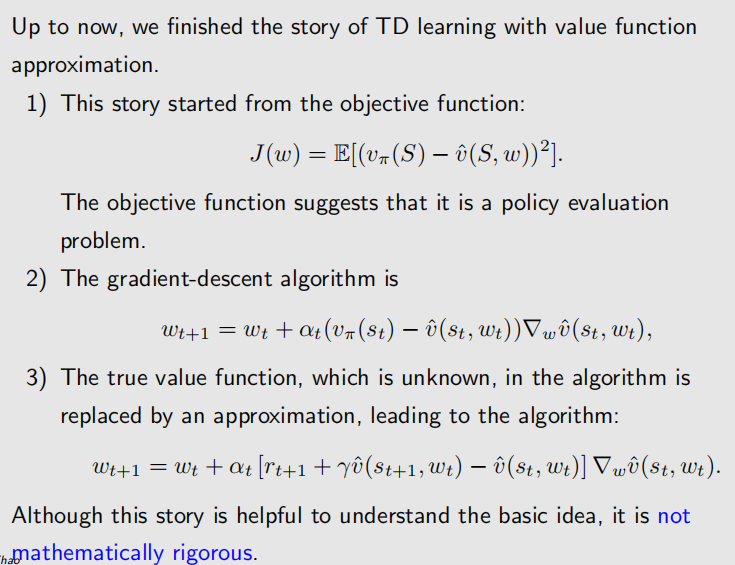


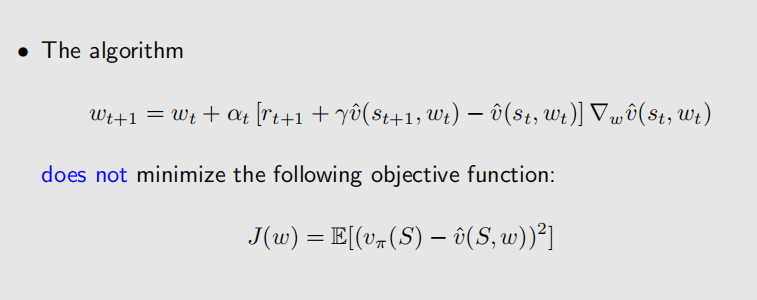


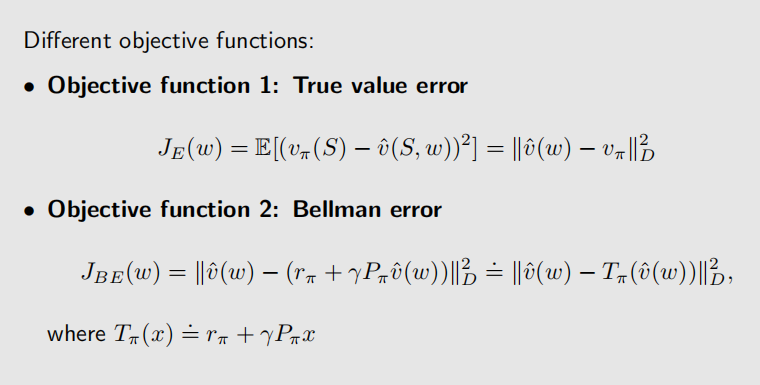


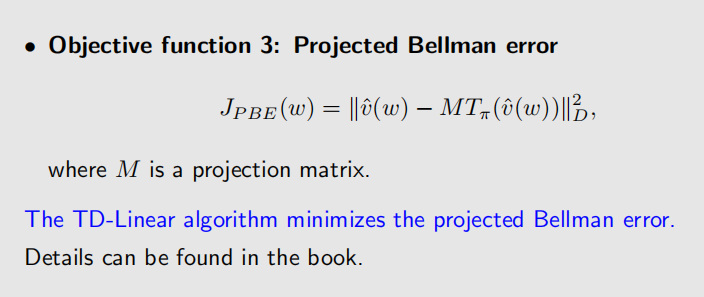


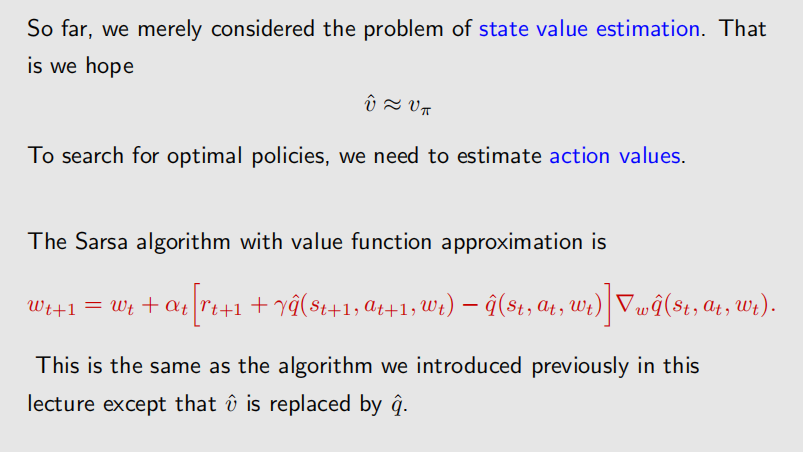
总结：





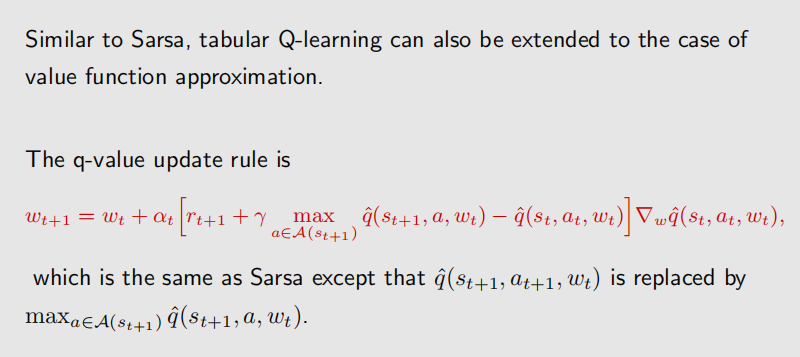


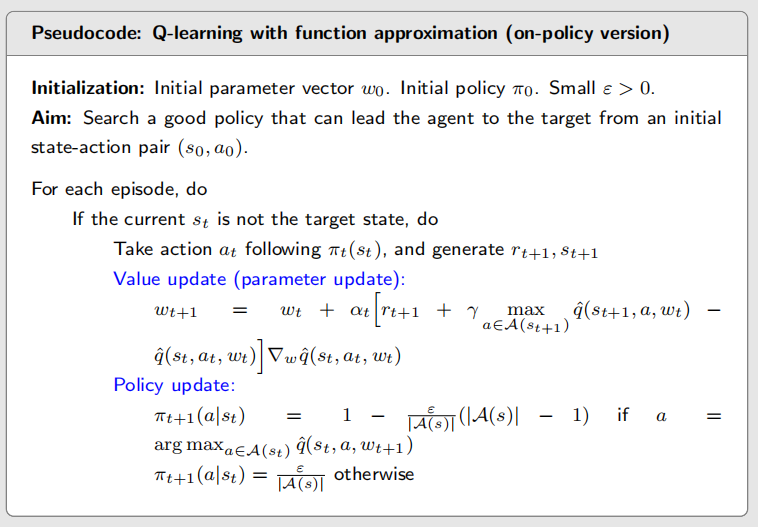


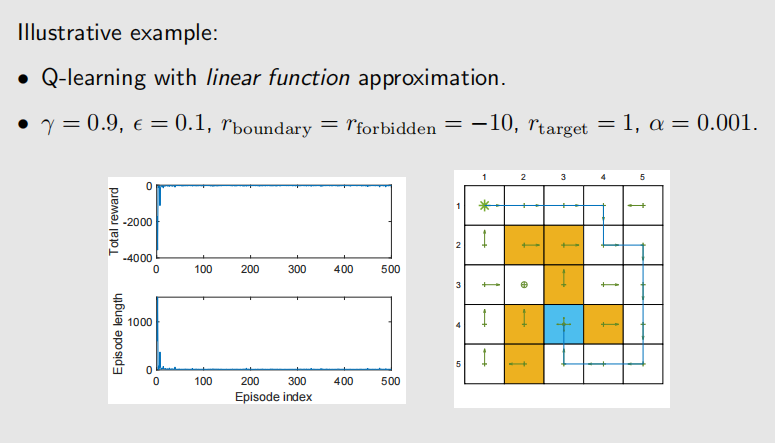




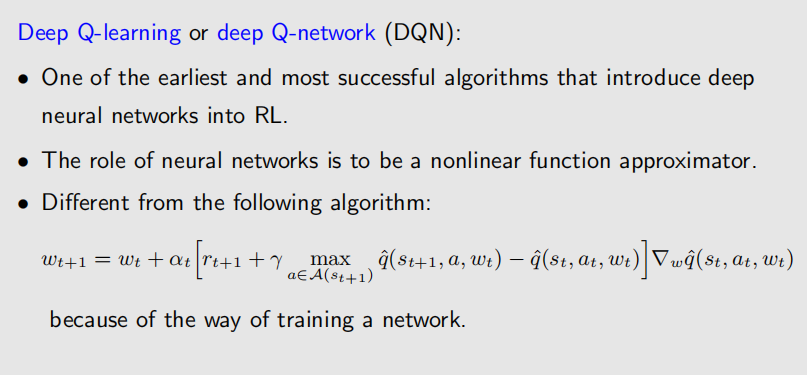


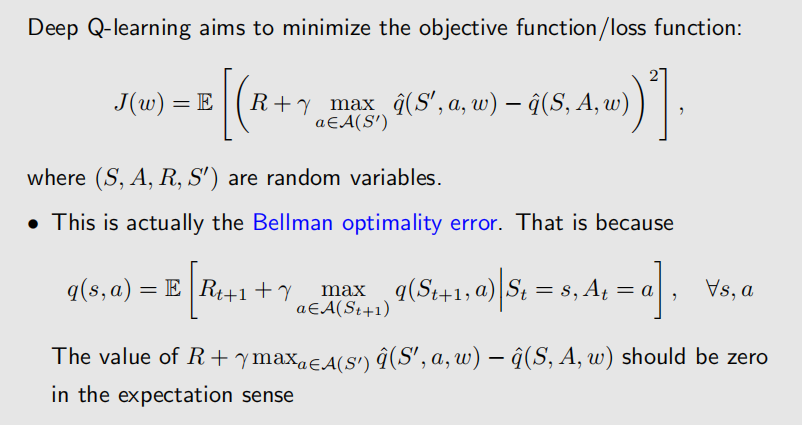


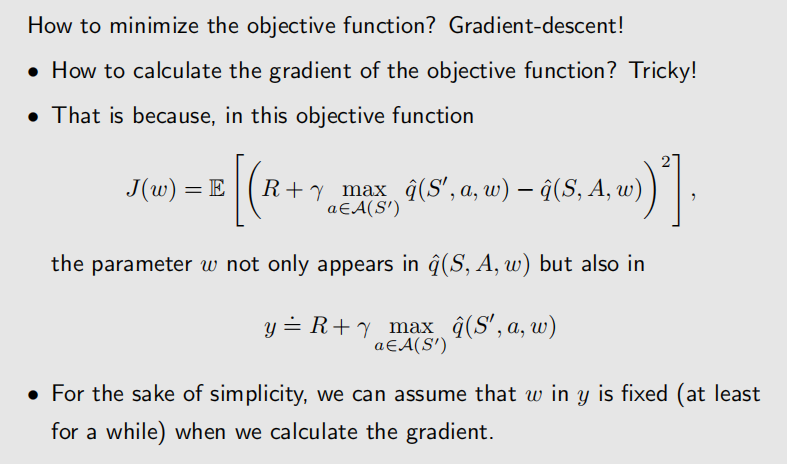


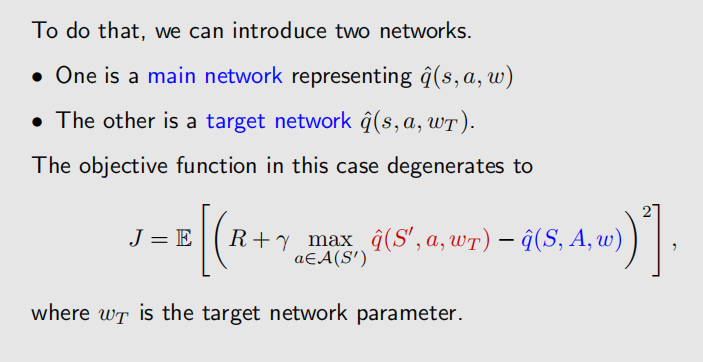


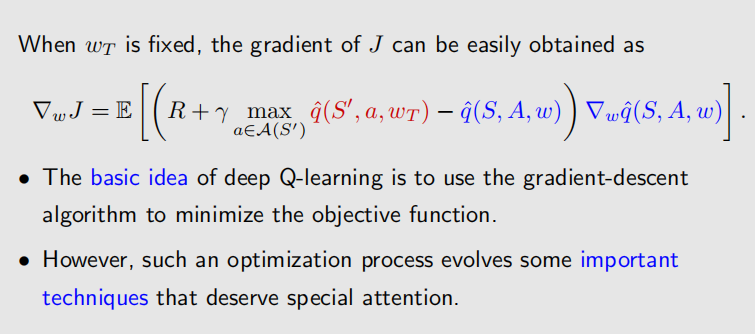
重点内容Deep Q-learning：

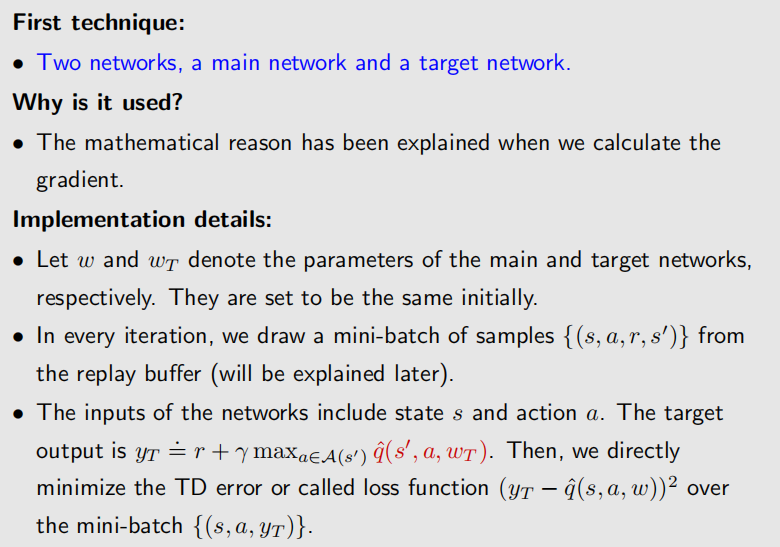


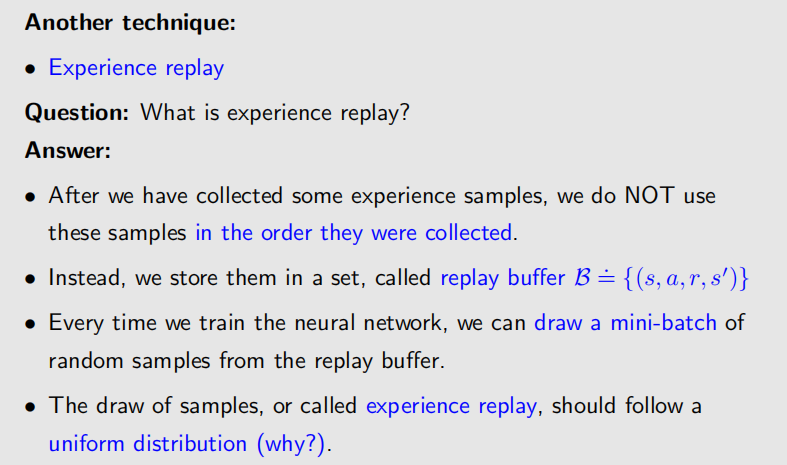


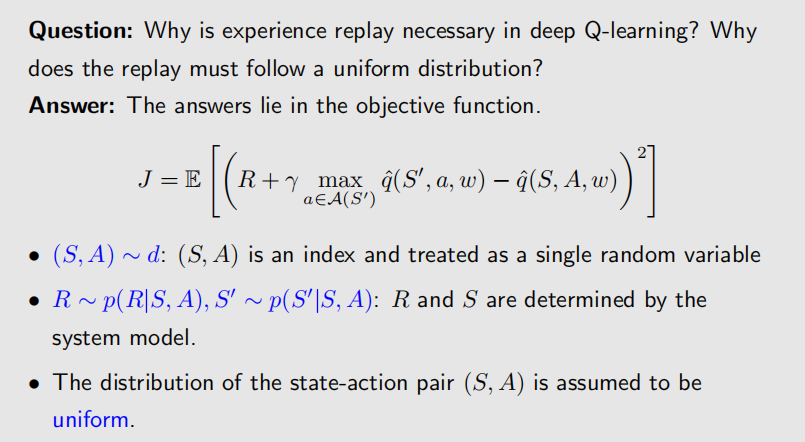


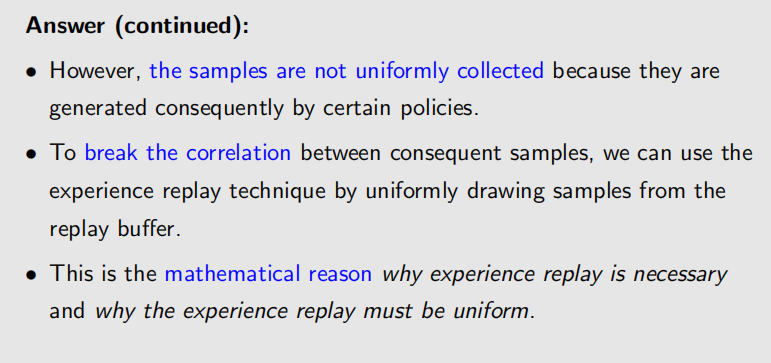


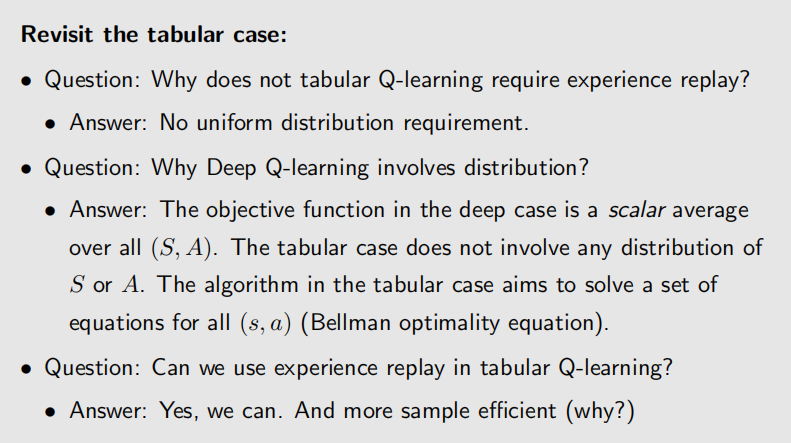


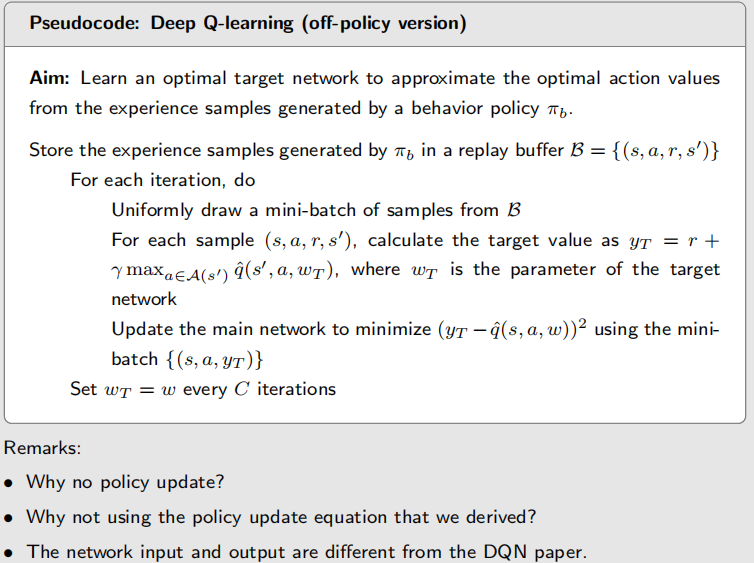


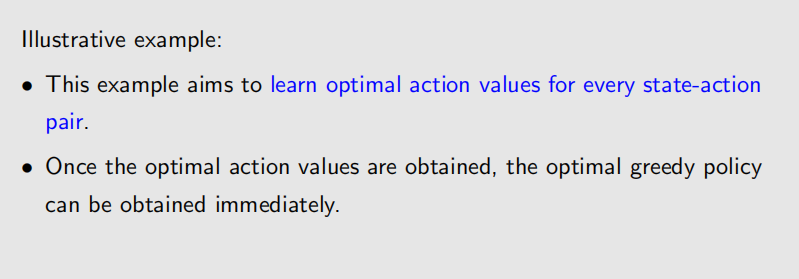


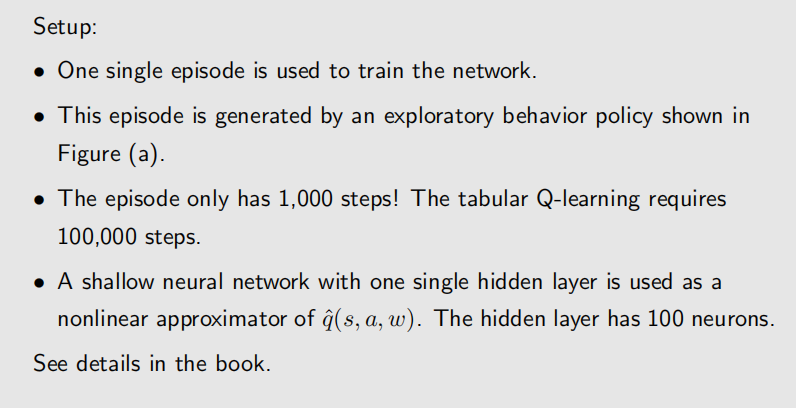


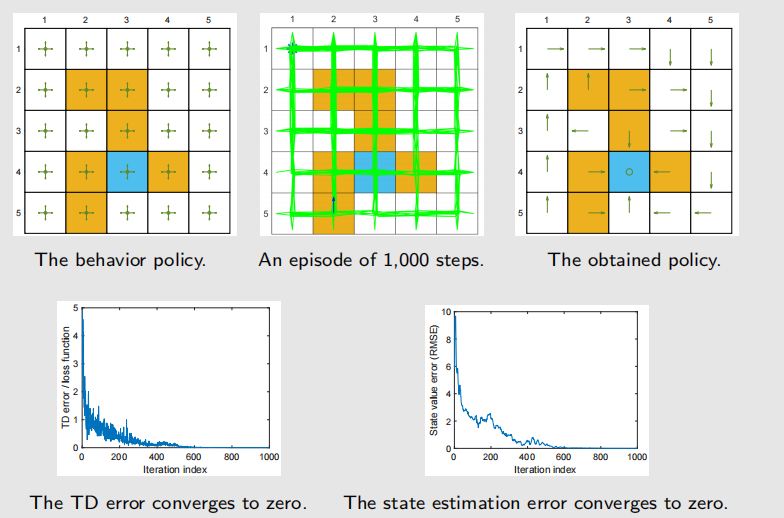


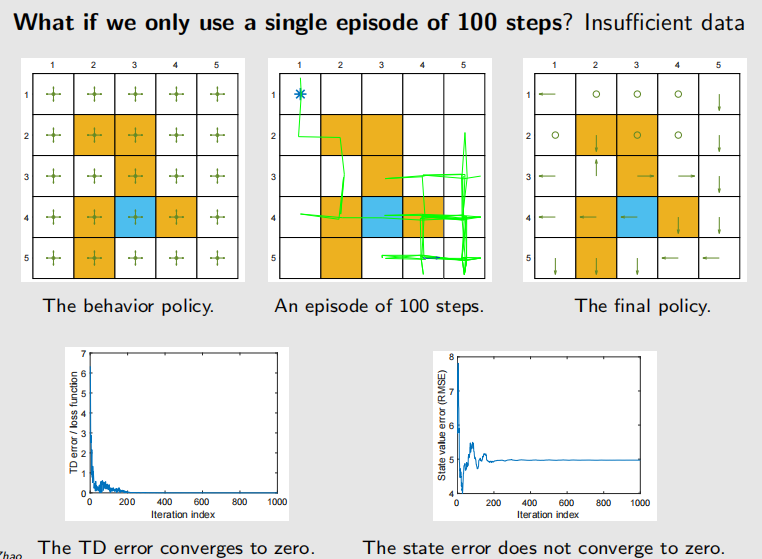












总结。