SAMPLES VS EXPECTATIONS

15

- Can estimate the average feature using expectations.

$$\pi[f] = \mathbb{E}_{X \sim \pi}[f(X)]$$

- Expectations, probabilities fully characterise distributions:

- If μ is some distribution such that $\mu[f] = \pi[f]$ for all bounded f then $\mu = \pi$

- If μ is some distribution such that $\mu[A] = \pi[A]$ for all $A \subset \mathbb{X}$ then $\mu = \pi$

- We will say that we can efficiently sample from X if we can provide we can efficiently compute $\pi[f]$ for any f

- Given a sample $X \sim \pi$, we can code features $f(X)$ of X using a statistic $f : \mathbb{X} \to \mathbb{R}$

- This is basically a course on numerically computing integrals

SAMPLES VS EXPECTATIONS

- Given a sample $X \sim \pi$, we can code features $f(X)$ of X using a statistic $f : \mathbb{X} \to \mathbb{R}$
- Can estimate the average feature using expectations.

$$\pi[f] = \mathbb{E}_{X\sim\pi}[f(X)]$$

- Expectations, probabilities fully characterise distributions:
  - If μ is some distribution such that $\mu[A] = \pi[A]$ for all $A \subset \mathbb{X}$ then $\mu = \pi$
  - If μ is some distribution such that $\mu[f] = \pi[f]$ for all bounded f then $\mu = \pi$
- We will say that we can efficiently sample from X if we can provide we can efficiently compute $\pi[f]$ for any f
- This is basically a course on numerically computing integrals

MONTE CARLO METHODS: