

XGBoost Math and ...

o Mining Example

From 0 to time t we can formulate a transition + continuous objective function that we can solve for.

But this turns out to be a N-P hard integral problem if t (time) tends to infinity

Itself uses a Branch - bound techniques

Iterative + repeatable

o \therefore We introduce dynamic programming based caching technique

o \rightarrow We can use tail-end recursion or for-loops to solve this problem

o Both will require to determine stop criterion + Designing of caching.

At any current state of all state variable we need to solve for all feasible choices.

This is greedy
so best
sol till this state.

2 step design.

1. Caching + stop criterion design.

2. Procedural flow of the feasible choices.

\Rightarrow if + elif in Knapsack
if.

\Rightarrow for in \leq (all till this value)
in take, Mining problem.

\Rightarrow At time t :
 $V(s, t) = \text{All choices of } x \text{ between } 0 \text{ and } s \text{ and } V(s-x, t+1)$
 $\left[PX - \frac{x^2}{1+s} + \right]$

Then take maximum statistic of all the solution set.

- Determine stop criterion?

1. We mine till time T
 And for any value of T is
 Reward at $T = 0$

↳ We determined the stop condition.

- 2. We can now formulate a link function based value equation to determine rewards at $t-1$. From a.

$$V(s, T-1) = \max_{0 \leq x \leq 1} \left[p x - \frac{x^2}{1+\beta} + V(s-x, T) \right]$$

This requires
 ingested new
 formulation.

↳ Link function

IIo Designing for evaluation of choices
 For (all choices of x)

At $T-1$, solve. $p x - \frac{x^2}{1+\beta} + V(s-x, T)$

Then we had to be assured that we have all solutions at T

↳ to solve for $T-1$

↳ This links to first design choice.

↳ How to cache.

Total mining ore

for t in range $(T, 0, -1)$
for ore_val in range (M)

↳ Tell me cache everything (all state information) at time T

↳ because we may use it in future (back-time) evaluation.

II

for all possible values of till m
Evaluate reward for all combination

compute max.

Cache $(t, \text{ore_val}) = \text{Max}$