CPP question

July 28 , 2017

Two CPP questions.

Assume vector x is the vector of mitigation levels we are looking for. Let *f(x)* be the function we are minimizing. For now assume *x* is given and we are just evaluating *f(x)*. *f(x)* is evaluated on the computation tree going *backward* in time starting from time $t = T_F$

Each node in the graph corresponds to a subfunction – say f_i corresponds to node *i* and x_i corresponds to the mitigation level on node *i*. Think of f_i written as

$$y_i = f_i(x, y_{k>i}(x), S_i)$$

Where $y_{k>i}$ is a subset of subfunction values computed to the right of node *i* (That is with time stamps after *i*). Note that $y_{k>i}$ is a function of x.

S_i corresponds to state information and is not a function of x (and is precomputed).

Question 1: What is the form of f_i ? Does this function explicitly depend only on component

x_i (and depend on some other components of *x* ONLY through $y_{k>i}$?)

Question 2: Is f_i a convex fcn of x_i ? Is *f(x) a convex function of x? Could you do some experiments to check the convexity before doing any theoretical proof?*