Algorithm 1: NPDR algorithm

input: training dataset X with m observations, p attributes, and outcome y

pre-process X
compute distance matrix D (Eq. 1)
select neighborhood method (adaptive or fixed)
find nearest neighbor pairs according to D and neighborhood method
$\mathbf{d}_y$ = distance vector among nearest neighbors in dimension y
for *attribute* $a := 1$ *to* p **do**
    $\mathbf{d}_a$ = distance vector among nearest neighbors in dimension a
    β_a = regression coefficient of a from $\mathbf{d}_y \sim \mathbf{d}_a$ (Eq. 8 or 15)
    β'_a = standardize β_a coefficient
return vector of all attribute importances $\boldsymbol{\beta'}$