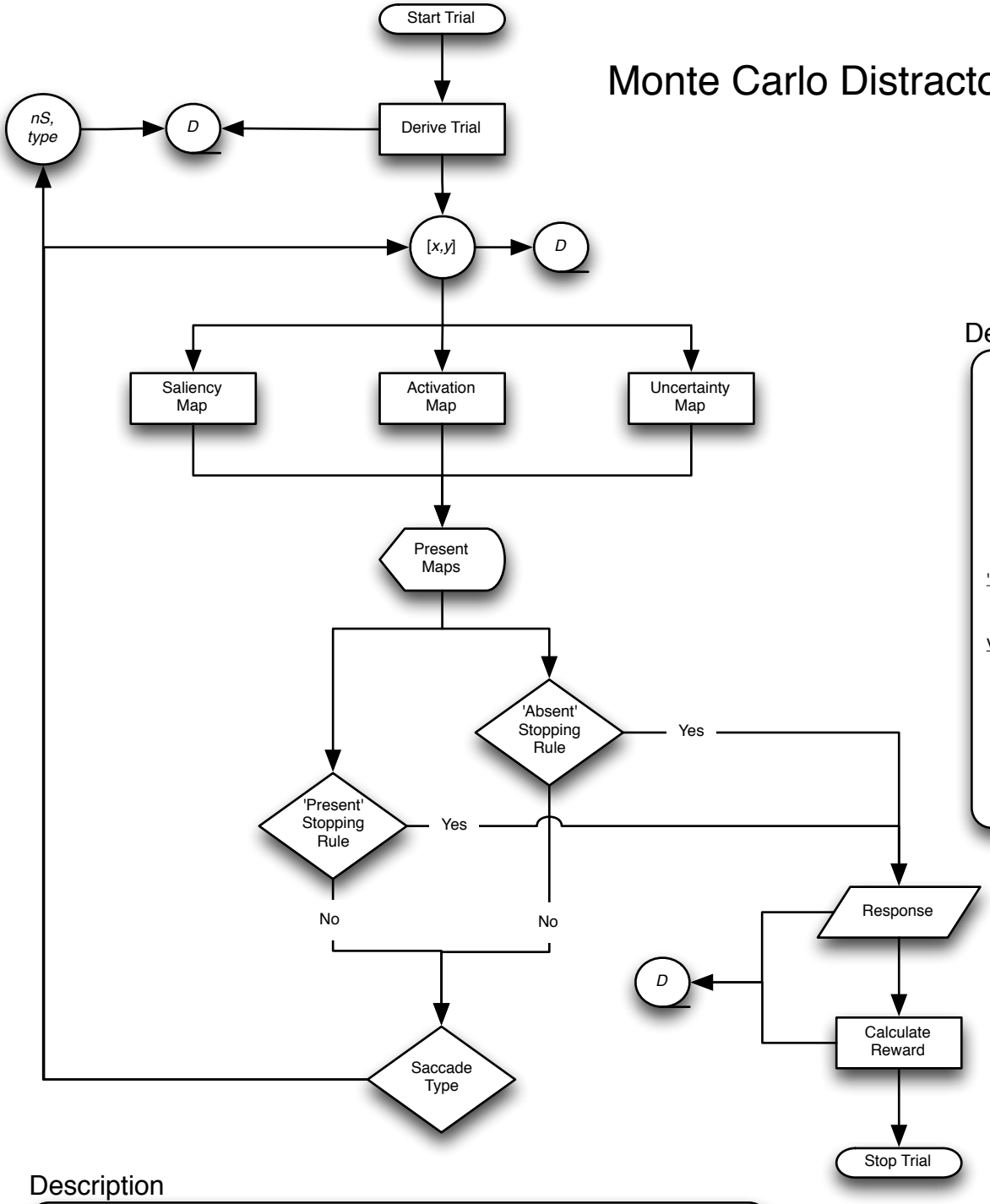
Monte Carlo Distractor-Ratio Model



Decisions &Variables

Saccade Type (*type*):
- nearest peak = *p*
- farthest peak = *p2*
- highest peak = 1 — (*p* + *p2*)

'Absent' Stopping Rule:
- # of available features > *C*

OR
- *nS* > *C*

'Present' Stopping Rule:
- All target features available

Variables:
- *x* = fixation x location
- *y* = fixation y location
- *p* = probability 1
- *p2* = probability 2
- *C* = criterion
- *nS* = number of saccades
- *type* = saccade type
- *nT* = number of trials
- *D* = data

Description

The model will sample from a set of all possible trials (complete set is not derived) w/ replacement (some trials may repeat by chance). A trial (present or absent target) will be submitted to the process of deriving the appropriate perceptual map information (salience, activation, or uncertainty, depending on the model). Raw values from the perceptual maps will be provided in each of the 48 item locations. Each map is then 'presented' to the set of available actions.

Depending on the number of maps, there will be a minimum of 3 saccade types and a maximum of 9 saccade types, where the general types are nearest peak, farthest peak, and highest peak, where 'peak' refers to the highest value from a map (salience, activation, and/or uncertainty). Deriving 'nearest' and 'furthest' will require determining a peak within a defined area - this may be tricky as the size of the area will have an effect on model performance (another variable?).

Following a saccade action, the model will either continue search or select a response action based on to concurrently running stopping rules: one for target absent trials and one for target present trials. Upon response, the reward is calculated and is appended to the trial and response and written to a data file.

Many trials (~10,000) will be run to adequately determine the generality of the saccade action types imposed by the selection probabilities. A wrapper function will systematically change the the saccade action probabilities after many trials with a given set of parameters.