

Application-Specific Rules

$\text{initiatedAt}(\text{moving}(P_1, P_2) = \text{true}, T) \leftarrow$
 $\text{happensAt}(\text{walking}(P_1), T),$
 $\text{happensAt}(\text{walking}(P_2), T),$
 $\text{holdsAt}(\text{close}(P_1, P_2) = \text{true}, T),$
 $\text{holdsAt}(\text{similarOrientation}(P_1, P_2) = \text{true}, T).$

$\text{terminatedAt}(\text{moving}(P_1, P_2) = \text{true}, T) \leftarrow$
 $\text{happensAt}(\text{walking}(P_1), T),$
 $\text{holdsAt}(\text{close}(P_1, P_2) = \text{false}, T).$
 \vdots

Event Calculus Axioms

$\text{holdsAt}(F = V, T) \leftarrow$
 $\text{initially}(F = V),$
 $\text{not broken}(F = V, 0, T).$

$\text{holdsAt}(F = V, T) \leftarrow$
 $\text{initiatedAt}(F = V, T_s), T_s < T,$
 $\text{not broken}(F = V, T_s, T).$
 \vdots

Prob-EC =
Event Calculus
+ ProbLog

Point-based CE Stream

$0.73 :: \text{holdsAt}(\text{moving}(id_0, id_1), T_1)$
 $0.83 :: \text{holdsAt}(\text{meeting}(id_1, id_5), T_2)$
 $0.34 :: \text{holdsAt}(\text{moving}(id_0, id_5), T_2)$
 $0.56 :: \text{holdsAt}(\text{moving}(id_0, id_1), T_2)$
 $0.92 :: \text{holdsAt}(\text{meeting}(id_1, id_5), T_3)$
 $0.44 :: \text{holdsAt}(\text{moving}(id_0, id_1), T_3)$
 \vdots

oPIEC =
PIEC +
support set

SDE Stream

$0.73 :: \text{happensAt}(\text{walking}(id_0), T_1)$
 $0.79 :: \text{happensAt}(\text{walking}(id_1), T_1)$
 $0.92 :: \text{happensAt}(\text{active}(id_5), T_1)$
 $0.85 :: \text{happensAt}(\text{inactive}(id_1), T_2)$
 $0.70 :: \text{happensAt}(\text{active}(id_5), T_2)$
 $0.45 :: \text{happensAt}(\text{walking}(id_0), T_3)$
 \vdots

Interval-based CE Stream

$0.61 :: \text{holdsFor}(\text{moving}(id_0, id_1), (T_1, T_2))$
 $0.88 :: \text{holdsFor}(\text{meeting}(id_1, id_5), (T_3, T_6))$
 $0.66 :: \text{holdsFor}(\text{moving}(id_0, id_5), (T_6, T_7))$
 $0.89 :: \text{holdsFor}(\text{moving}(id_0, id_1), (T_8, T_{12}))$
 $0.67 :: \text{holdsFor}(\text{meeting}(id_1, id_5), (T_{14}, T_{18}))$
 \vdots