i^{th} object in frame $t-1$

F_i^A

Shared

F_j^A

$a_{ij} = \varphi_A(F_i^A, F_j^A)$

$s_{ij} = \varphi_s(a_{ij}, m_{ij})$

I

$\begin{vmatrix} s_{00} & \cdots & \cdots & s_{0J} \\ \vdots & \ddots & s_{ij} & \vdots \\ s_{I0} & \cdots & \cdots & s_{IJ} \end{vmatrix}$

Affinity Matrix

j^{th} detection in frame t

F_j^M

$(x,y)_j^t$ → F C

$m_{ij} = \varphi_M(F_i^M, F_j^M)$

LSTM Unit → LSTM Unit → ⋯ → LSTM Unit

F_i^M

$(x,y)_i^{t-L}$ $(x,y)_i^{t-L+1}$ $(x,y)_i^{t-1}$

J

Siamese Network

Graph Neural Network

Optimal Association Matrix X^*

Graph Neural Network