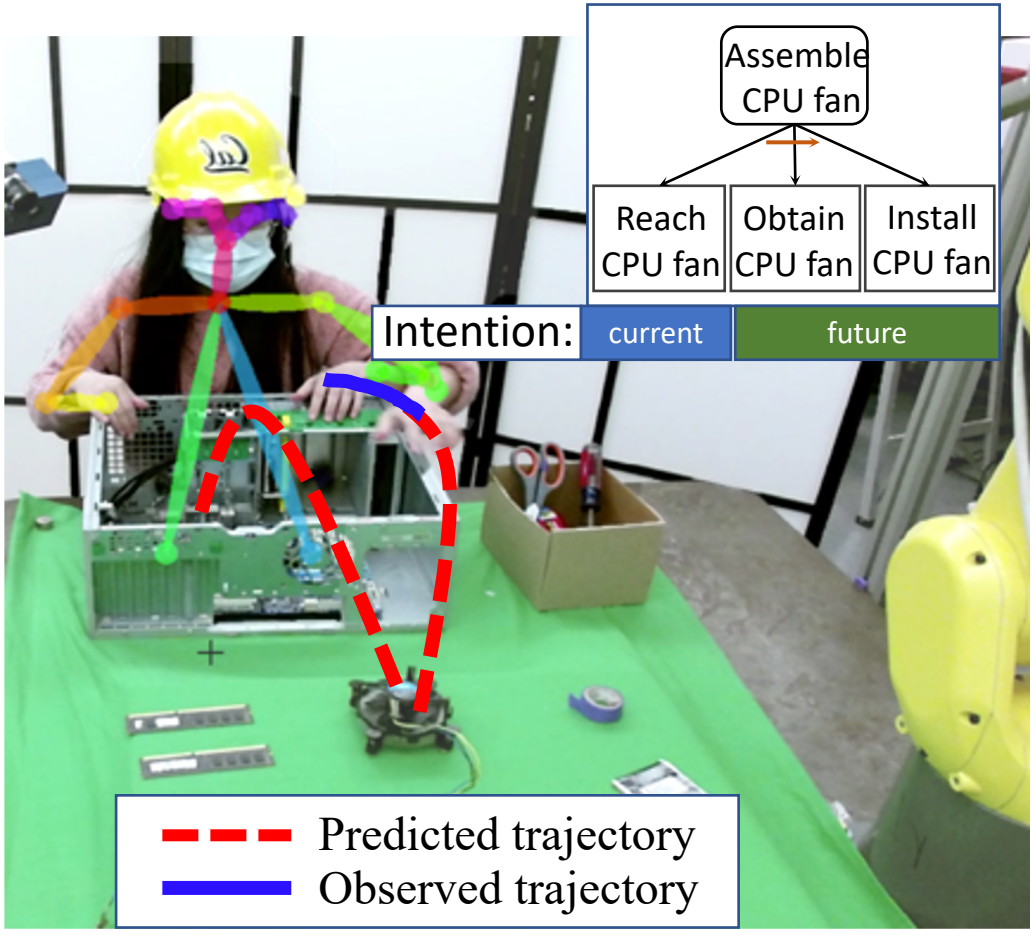

Algorithm 1 Long-term motion prediction algorithm at time t_k.

Input $\mathbf{v}_{1:t_{k-1}}$, $\mathbf{x}_{1:t_{k-1}}$, $a_{t_{k-1}}$, $\hat{\mathbf{v}}$, $\hat{\mathbf{v}}_{1,2,...,np}$
Output t_f, $\hat{\mathbf{x}}_{t_{k+1},...,t_f}$

$\mathbf{x}_{t_k}$ = PoseEstimation()
$a_{t_k}, \mathbf{a}'_{q^*}$ = IntentRecognition($\mathbf{x}_{1:t_k}$)
$\mathbf{v}_{t_k} = (\mathbf{x}_{t_k} - \mathbf{x}_{t_{k-1}})/\delta T$
if a_{t_k} changed **then**
    $\hat{\mathbf{v}}(t; \boldsymbol{\alpha}^*, \boldsymbol{\beta})$ = RetrieveMotionModel(a_{t_k})
    $\hat{\mathbf{v}}_{1,2,...,np}(t; \boldsymbol{\alpha}^*, \boldsymbol{\beta})$ = RetrieveMotionModel($\mathbf{a}'_{q^*}$)
end if
for Iteration = 1,2, ... **do**
    Update $\boldsymbol{\beta}$ using Equation (5)(6)(7)
end for
t_f = ZeroCrossing($\hat{\mathbf{v}}(t; \boldsymbol{\alpha}^*, \boldsymbol{\beta})$)
for Iteration = 1,2, ... **do**
    Update $\boldsymbol{\beta}$ using Equation (11)(12)(13)
    t_f = Zero-Crossing($\hat{\mathbf{v}}(t; \boldsymbol{\alpha}^*, \boldsymbol{\beta})$, threshold)
end for
for t = t_{k+1},...,t_f **do**
    $\hat{\mathbf{x}}(t) = \mathbf{x}(t_k) + \int_{t_k}^{t} \hat{\mathbf{v}}(s; \boldsymbol{\alpha}^*, \boldsymbol{\beta}) ds$
end for
$\mathbf{t_f}$' = Zero-Crossing($\hat{\mathbf{v}}_{1,2,...,np}(t; \boldsymbol{\alpha}^*, \boldsymbol{\beta})$,threshold)
for $i = 1, 2, ..., np$ **do**
    Predict $\hat{\mathbf{x}}(t)$, for $t = t'_{fi-1} : t'_{fi}$
end for