Algorithm 1 Base Line

procedure MAIN
    $EPISODES \leftarrow N$
    $ITERATIONS \leftarrow M$
    $K \leftarrow$ *Number of joints*
    constraint $\leftarrow$ *Max joint velocity*
    Start environment

    for $i \leftarrow 1,$ *EPISODES* **do**
        for $j \leftarrow 1,$ *ITERATIONS* **do**
            while *constraint is not satisfied* **do**
                Sample new set of actions $\{a_{k,j}\}_{k=1}^{K}$ with $\mathcal{N}(0, \frac{constraint}{\sqrt{2}})$
            Interpolate trajectory between $\{a_{k,j-1}\}_{k=1}^{K}$ and $\{a_{k,j}\}_{k=1}^{K}$
            Reset environment

Algorithm 2 Autoencoder

procedure MAIN
  $EPISODES \leftarrow N$
  $ITERATIONS \leftarrow M$
  $K \leftarrow$ *Number of joints*
  constraint $\leftarrow$ *Max joint velocity*
  Initialize Autoencoder

  for $i \leftarrow 1,$ *EPISODES* **do**
    for $j \leftarrow 1,$ *ITERATIONS* **do**
      while *constraint not satisfied & max iteration not reached* **do**
        ▷ X refers to set of candidate solution proposed by CMA-ES
        $\{a_{k,j}\}_{k=1}^{K} \leftarrow \underset{x \in X}{\operatorname{argmin}} \operatorname{density}(AE(\{s_{k,j}, a_{k,x}\}_{k=1}^{K}))$
      Interpolate trajectory between $\{a_{k,j-1}\}_{k=1}^{K}$ and $\{a_{k,j}\}_{k=1}^{K}$
      Add current state and action $\{s_{k,j}, a_{k,j}\}_{k=1}^{K}$ to replay buffer R
      Reset environment

    Train Autoencoder
    Save hidden layer data

Algorithm 3 PCA

procedure MAIN
  $EPISODES \leftarrow N$
  $ITERATIONS \leftarrow M$
  $K \leftarrow$ *Number of joints*
  constraint $\leftarrow$ *Max joint velocity*

  for $i \leftarrow 1,$ *EPISODES* **do**
    for $j \leftarrow 1,$ *ITERATIONS* **do**
      while *constraint not satisfied & max iteration not reached* **do**
        ▷ X refers to set of candidate solution proposed by CMA-ES
        $\{a_{k,j}\}_{k=1}^{K} \leftarrow \underset{x \in X}{\operatorname{argmin}} \operatorname{density}(AE(\{s_{k,j}, a_{k,x}\}_{k=1}^{K}))$
      Interpolate trajectory between $\{a_{k,j-1}\}_{k=1}^{K}$ and $\{a_{k,j}\}_{k=1}^{K}$
      Add current state and action $\{s_k, a_{k,j}\}_{k=1}^{K}$ to replay buffer R
      Fit PCA with state-action-pairs from replay buffer R
      Reset environment