Algorithm 1 Base Line

```
1: procedure Main
           EPISODES \leftarrow N
 3:
           ITERATIONS \leftarrow M
 4:
           K \leftarrow Number\ of\ joints
           constraint \leftarrow Max\ joint\ velocity
 5:
           Start environment
 6:
 7:
           \textbf{for}\ i \leftarrow 1,\ \textit{EPISODES}\ \textbf{do}
 8:
                for j \leftarrow 1, ITERATIONS do
 9:
                      \mathbf{while} \ constraint \ is \ not \ satisfied \ \mathbf{do}
10:
                     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
11:
12:
                      Reset environment
13:
14:
```

Algorithm 2 Autoencoder

```
1: procedure MAIN
          EPISODES \leftarrow N
 2:
          ITERATIONS \leftarrow M
 3:
          K \leftarrow Number\ of\ joints
 4:
         constraint \leftarrow Max\ joint\ velocity
 5:
 6:
         Initialize Autoencoder
 7:
         for i \leftarrow 1, EPISODES do
 8:
              for j \leftarrow 1, ITERATIONS do
 9:
                   while constraint not satisfied & max iteration not reached do
10:
                         \triangleright X refers to set of candidate solution proposed by CMA-ES
11:
                        \{a_{k,j}\}_{k=1}^K \leftarrow \underset{x \in X}{\operatorname{argmin density}} (AE(\{s_{k,j}, a_{k,x}\}_{k=1}^K))
12:
                   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
13:
14:
                   Reset environment
15:
16:
              Train Autoencoder
17:
18:
              Save hidden layer data
```

Algorithm 3 PCA

```
1: procedure MAIN
          EPISODES \leftarrow N
 2:
 3:
          ITERATIONS \leftarrow M
          K \leftarrow Number\ of\ joints
 4:
          constraint \leftarrow Max\ joint\ velocity
 5:
 6:
 7:
          for i \leftarrow 1, EPISODES do
               for j \leftarrow 1, ITERATIONS do
 8:
                   while constraint not satisfied & max iteration not reached do
 9:
                         ▷ X refers to set of candidate solution proposed by CMA-ES
10:
                        \{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))
11:
                   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
12:
13:
                   Fit PCA with state-action-pairs from replay buffer R
14:
                   Reset environment
15:
16:
```