Algorithm 1 Data Cleansing(IR-MHMM λ for M readers, Raw transformed RFID sequence $\boldsymbol{v}_r$ of length T)

$\hat{\boldsymbol{s}} \leftarrow$ **Viterbi** $(\boldsymbol{v}_r, \lambda)$
$\hat{\boldsymbol{v}}_c = \emptyset$
for $t = 0 \ldots T-1$ **do**
    $i =$ state index of $\hat{s}^{(t)}$
    $p \leftarrow 0.5$
    $k_{max} = 0$
    for $k = 0 \ldots M$ **do**
        if $(b_{ik} > p)$ **then**
            $k_{max} \leftarrow k$
            $p \leftarrow b_{ik}$
    if $k_{max} > 0$ **then**
        $\mathbf{Concat}(\hat{\boldsymbol{v}}_c, \boldsymbol{e}_{k_{max}})$ ▷ Append $\boldsymbol{e}_{k_{max}}$ as tth component to output sequence
    else
        $\mathbf{Concat}(\hat{\boldsymbol{v}}_c, \mathbf{0})$ ▷ Append $\mathbf{0}$ as tth component to output sequence
return $\hat{\boldsymbol{v}}_c$