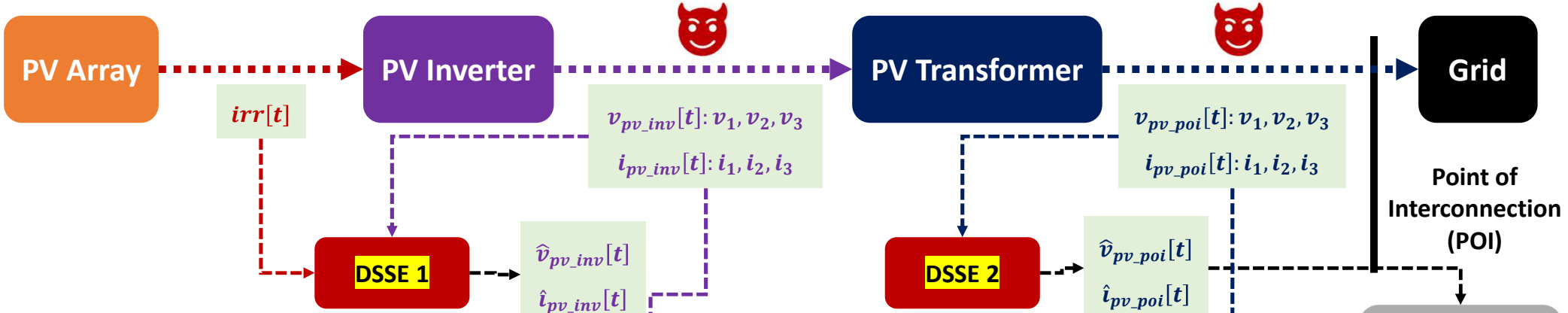
SolarShield: On-Demand Solar Data Security Solution



Algorithm 1 Distribution System State Estimation (DSSE) Algorithm for Accurate and Real-time Information for Distributed Solar Generation

while $t = 1, 2, 3, \ldots$ **do**
  $P_0 \leftarrow eye(m)$
  $\hat{\theta}_n \leftarrow (X_n^T \cdot X_n)^{-1} \cdot X_n^T \cdot Y_n$
  if $n > \nu_s$ **then**
    $\phi_n \leftarrow X_n(end, :)^T$
    $P_n \leftarrow P_{n-1} - \frac{P_{n-1} \cdot \phi_n \cdot \phi_n^T \cdot P_{n-1}}{1 + \phi_n^T \cdot P_{n-1} \cdot \phi_n}$
    $Y_e \leftarrow Y_n(end, :)$
    $\hat{\theta}_{n+1} \leftarrow \hat{\theta}_n + \frac{(P_{n-1} \cdot \phi_n)}{1 + \phi_n^T \cdot P_{n-1} \cdot \phi_n} \cdot (Y_e - \phi_n^T \cdot \hat{\theta}_n)$
    $\lambda \leftarrow \lambda_{opt}$
    $R_{n,\lambda}^{-1} \leftarrow \frac{1}{\lambda} \cdot R_{n-1,\lambda}^{-1} - \frac{1}{\lambda} \cdot \frac{R_{n-1,\lambda}^{-1} \cdot \phi_n \cdot \phi_n^T \cdot R_{n-1,\lambda}^{-1}}{\lambda + \phi_n^T \cdot R_{n-1,\lambda}^{-1} \cdot \phi_n}$
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