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IPFC - Inter line power flow controller
X & Y - Left & right eigenvector
V & W - Left & right singular vector
$x_c$ - Line Capacitance
$\eta_k$ - Line compensation factor in the range of (-0.8, 0.2) for $k^{th}$ FACTS device
$L_i$ - Line indicator
$x_k$ - Line Inductance
LP - Linear programming
LS - Load shedding
$Q_{Gi}^{\min}$ and $Q_{Gi}^{\max}$ - Lower and upper limit reactive power generation at bus-$i$ respectively
$V_i^{\min}$ and $V_i^{\max}$ - Lower and upper limits of voltage magnitude at bus-$i$ respectively
$E_{\max}$ - Maximum emigration rate
$I_{\max}$ - Maximum immigration rate
$m_{\max}$ - Maximum mutation rate
Iter$^{\max}$ - Maximum number of iterations
$P_{\max}$ - Maximum probability
$S_{\max}$ - Maximum species in the habitat
$Q_l$ - Mega var injection
MVAR - Mega volt ampere reactive
$m(s)$ - Mutation rate for habitat possessing $S$ species
$L_k$ - Number of a line, where $k^{th}$ FACTS device is to be located
$neh$ - Number of elite habitats
$nf$ - Number of FACTS devices
\( nh \) - Number of habitats

\( n_{load} \) - Number of load buses

\( \Phi(x,u) \) - Objective function

PSO - Particle swarm optimization

\( V_{sh} \) - Positive sequence shunt voltage

\( P^S(t) \) - Probability that the habitat contains exactly \( S \) species at time \( t \)

PM - Proposed method

\( X_{SVC} \) - Reactance of SVC

\( x_F \) - Reactance of the FACTS device

\( x_{ij} \) - Reactance of the transmission line between buses- \( i \) and \( j \)

\( Q_k \) - Reactive power at \( k \)-th bus

\( Q_{sh} \) - Reactive power at shunt connected source

\( Q_{ji} \) - Reactive power flow from \( j \)-th bus to \( i \)-th bus

\( Q_{Gi} \) - Reactive power generation at bus- \( i \)

\( Q_{Fi} \) - Reactive power supplied by the FACTS device at bus- \( i \)

\( Q_F^k \) - Reactive power support by \( k \)-th FACTS device in MVAR

\( Q_v \) - Reactive power voltage

\( P_{sh} \) - Real power flow at shunt voltage source

\( P_{ji} \) - Real power flow from \( j \)-th bus to \( i \) bus

\( P_v \) - Real power voltage

\( V_{se} \) - Series connected voltage source

\( \theta_{se} \) - Series converter angle in IPFC

\( V_{se} \) - Series converter voltage of IPFC
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$B_{svc}$ - SVC susceptance

$B_{svc}^i$ - SVC susceptance at $i^{th}$ iteration

$P_L$ - System real power loss

Subscript $i$ - Terminal buses of line-$m$

and $j$

TCPAR - Thyristor controlled phase angle regulator

TCSC - Thyristor controlled series compensator

$n$ - Total number of species in the habitat

$T_k$ - Type of $k^{th}$ FACTS device

UPFC - Unified power flow controller

$\alpha_{svc}$ - Variable firing angle of SVC

$u$ - Vector of control or independent variables

$x$ - Vector of dependent variables

$\delta_{ij}$ - Voltage angle between buses-$i$ and $j$

$V_{di}$ - Voltage deviation at bus-$i$

$V_i$ - Voltage flow at $i$-th bus

$V_i$ and $V_j$ - Voltage magnitude at buses-$i$ and $j$ respectively

VP - Voltage profile

VR - Voltage regulators

VS - Voltage stability

RVI - Voltage stability index

$w_1$ and $w_2$ - Weight constants