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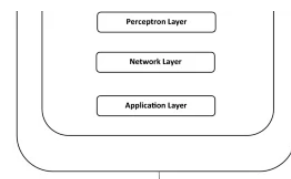
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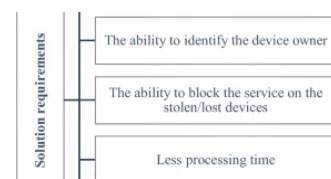


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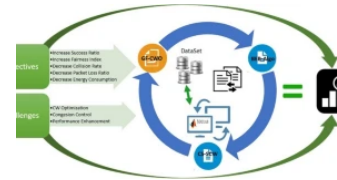


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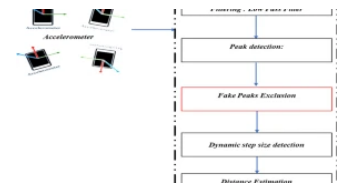


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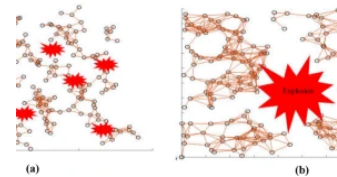


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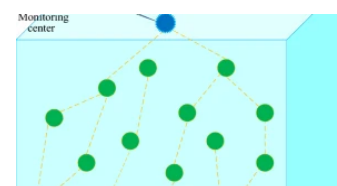


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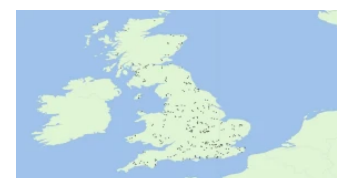
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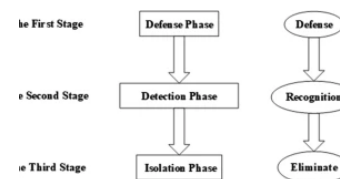
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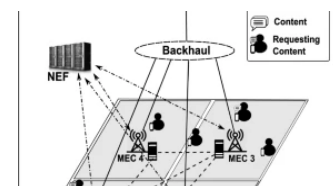
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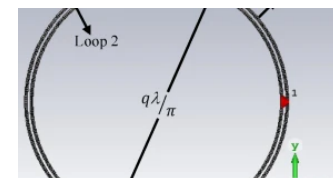
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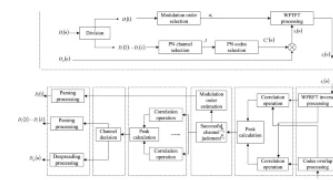
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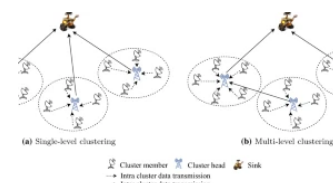


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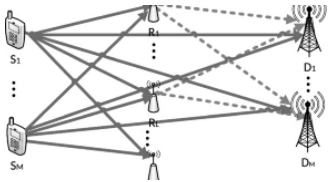
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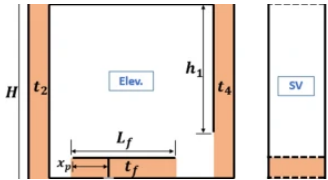


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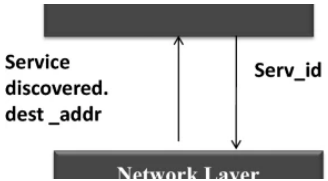


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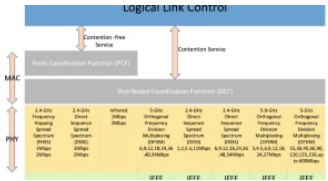


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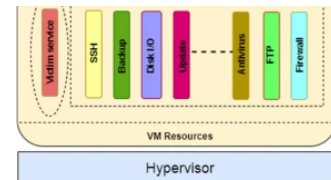


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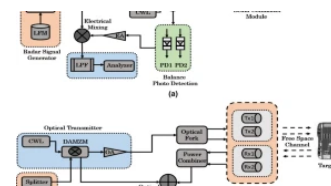


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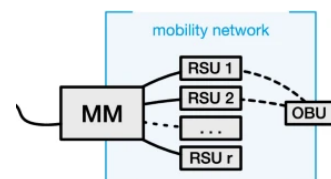


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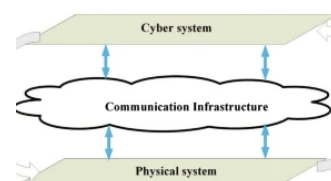


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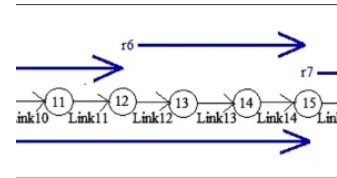


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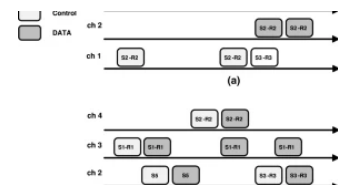


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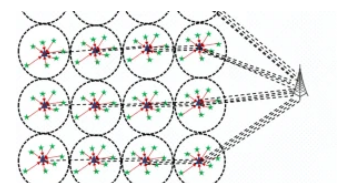


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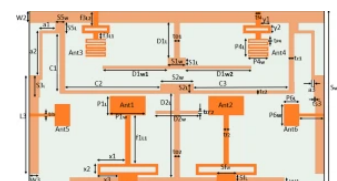


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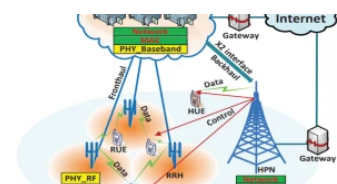


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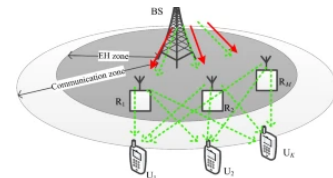
```
Update current best position of whale
else if2 (f(A)>f)
    Select a whale random search agent (Xrand)
    Update the best search agent in the whale
end if2
else if1 (p 0.5)
    Update best search agent position
```

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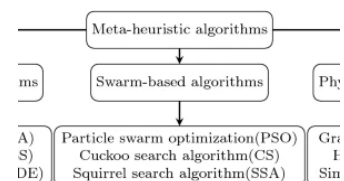


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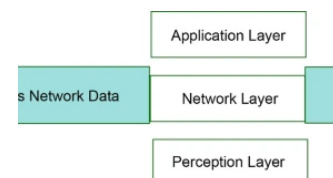


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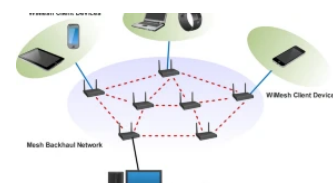
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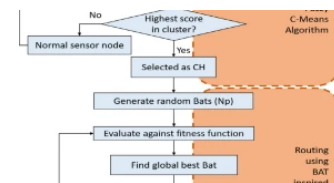
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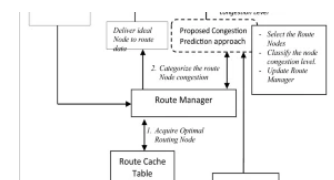


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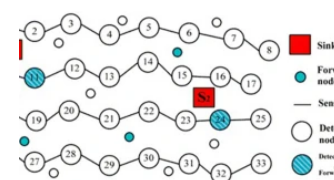


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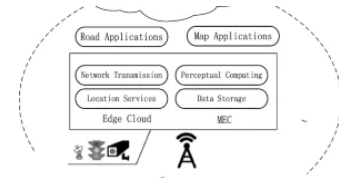


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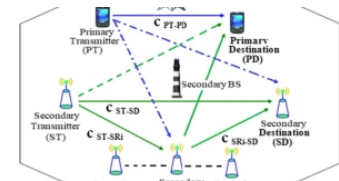


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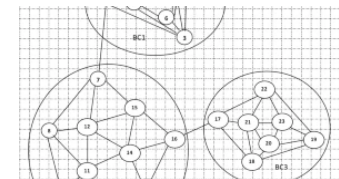


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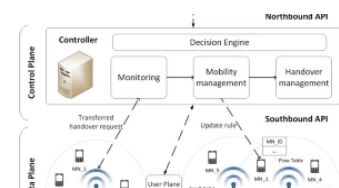


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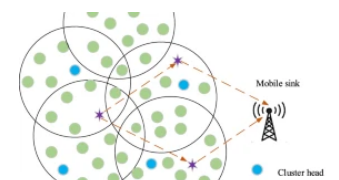
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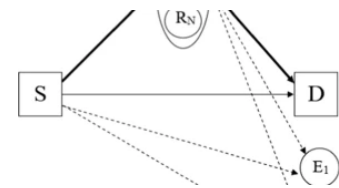
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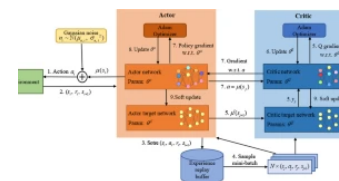
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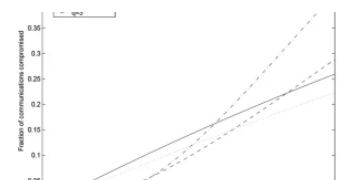
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$$\frac{\partial \text{loss}}{\partial x_i} = 2 \cdot \left(d_{ij} - \sqrt{(x_i - x_j)^2 + (y_i - y_j)^2} \right) \cdot \frac{x_i - x_j}{\sqrt{(x_i - x_j)^2 + (y_i - y_j)^2}} \quad (6)$$

$$\frac{\partial \text{loss}}{\partial y_i} = 2 \cdot \left(d_{ij} - \sqrt{(x_i - x_j)^2 + (y_i - y_j)^2} \right) \cdot \frac{y_i - y_j}{\sqrt{(x_i - x_j)^2 + (y_i - y_j)^2}} \quad (7)$$

[A survey of key pre-distribution schemes based on combinatorial designs for resource-constrained devices in the IoT network](#)

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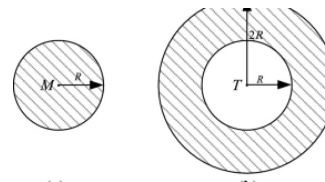


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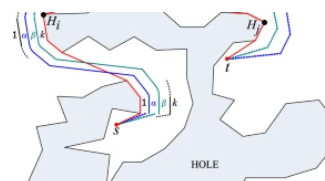


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