NETWORK SELECTION BY VARIOUS ALGORITHMS

From the simulated results, the selection criterion of the best network is given in table.3.According to the IEEE standards specified in table.2 UMTS and Wi-Max are the best networks in terms of various parameters that are considered like available bandwidth, total bandwidth, delay, jitter, packet loss and cost.

N1: UMTS-1, N2: UMTS-2, N3:WiLAN-1, N4:WiLAN-2, N5:WiMax-1, N6:WiMax-2,

SW: Standard Weights, EW: Entropy weights

Table 3: Selection Of best Network by various algorithms

Parameters/ Networks Selection	Original Data		Available Band-width		Total Band-width		Packet delay		Packet jitter		Packet loss		Cost	
	SW	EW	SW	EW	SW	EW	SW	EW	SW	EW	SW	EW	SW	EW
OBAM	N4	N4	N4	N4	N4	N4	N4	N4	N4	N4	N4	N4	N4	N4
RRTA	N1	N1	N1	N1	N1	N1	N1	N1	N2	N1	N1	N1	N1	N1
EDBNS	N5		N5		N1		N6		N5		N5		N5	
PBNSA	N1	N1	N1	N1	N1	N1	N6	N6	N1	N1	N1	N1	N1	N1
SBNSA	N5	N5	N5	N1	N1	N5	N5	N5	N5	N5	N5	N5	N5	N5

EFFICIENCIES OF VARIOUS PROPOSED ALGORITHMS

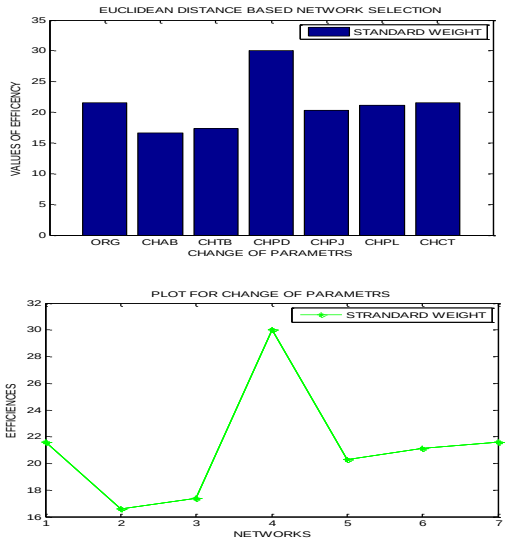
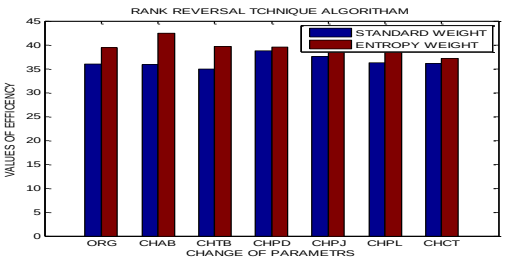


Figure 41: Efficiencies of EDBNS for various parameters considering SW and EW.



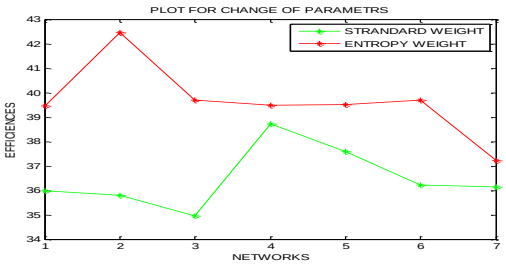


Figure 42: Efficiencies of RRTA for various parameters considering SW and EW.

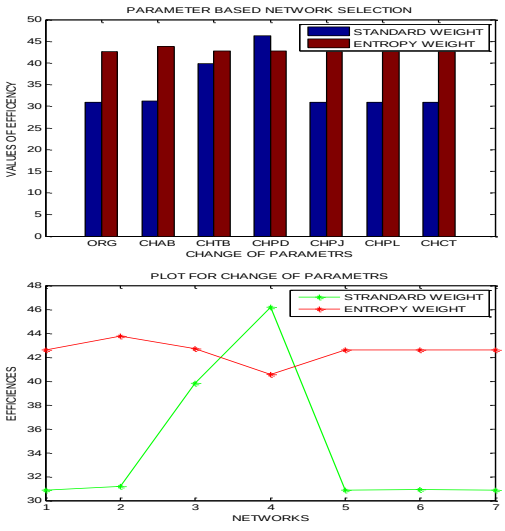


Figure 43: Efficiencies of PBNSA Algorithm for various parameters for SW and EW.

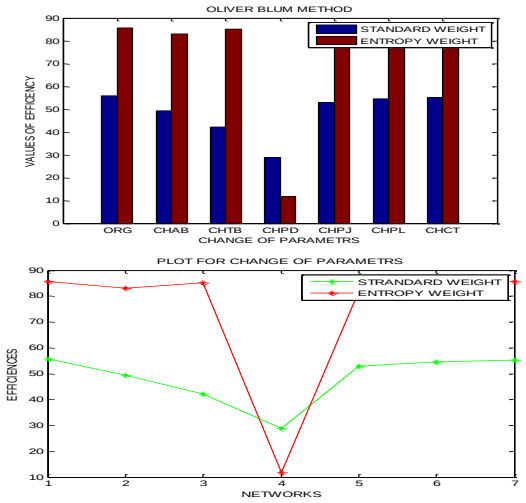


Figure 44: Efficiencies of OBAM for various parameters considering SW and EW.

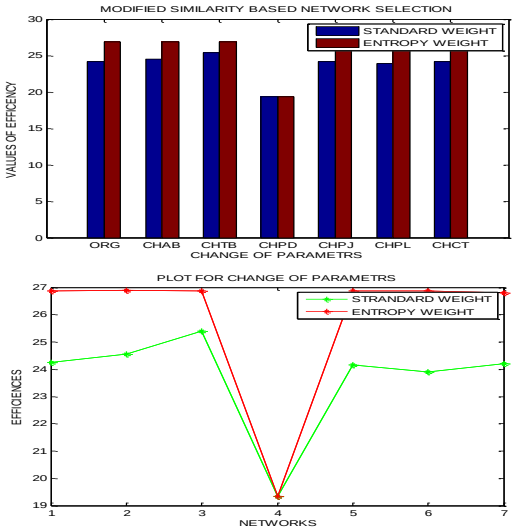


Figure 45: Efficiencies of SBNSA for various parameters considering SW and EW.

Table 4: Efficiencies of the networks based on parameter criterion

Parameters/ Network Efficiency	Original Data		Available Band-width		Total Band-width		Packet delay		Packet jitter		Packet loss		Cost	
	SW	EW	SW	EW	SW	EW	SW	EW	SW	EW	SW	EW	SW	EW
Efficiency of RRTA	35.9	39.4	35.8	42.5	34.9	39.7	38.7	39.5	37.6	39.5	36.2	39.7	36.2	37.2
Efficiency of PBNSA	30.9	42.6	31.2	43.8	39.8	42.7	46.2	40.6	30.9	42.6	30.9	42.6	30.8	42.7
Efficiency of OBAM	55.8	85.6	49.4	83.1	42.2	85.2	28.8	11.8	53.1	82.1	54.6	85.2	55.2	85.6
Efficiency of MSBA	24.2	26.9	24.6	26.9	25.4	26.9	19.3	19.4	24.2	26.8	23.1	26.9	24.2	26.8
Efficiency of EDBNS	21.6		16.6		17.3		30.1		20.3		21.1		21.5	

ELUCIDATION OF RESULTS

The vertical handoff mechanisms based on the five algorithms that were proposed in the literature are implemented. Two different weight vectors are considered, one W_j taken from IEEE standard calculations and the other W_e, which is calculated using entropy method as discussed in section 3. Using these weight matrices the performance of the five algorithms which were are tested. The evaluation is done for various QoS triggers like Bandwidth, delay, jitter, loss and cost. The algorithms and their performance based on various QoS parameters are simulated using MATLAB. Using the evaluated results the best network among UMTS, WiFi, Wi-MAX is selected. The efficiency of each algorithm is also calculated.

- For simulating the VHO models, the five QoS parameters i.e. bandwidth, delay, jitter, loss and cost are used. In this paper the investigation is to select the best network among the networks that are taken (UMTS, WiFi, Wi-MAX).
- From figure 6, the performance of Euclidean Distance Based Network Selection Algorithm (EDBNS) is analysed considering the original data in table1.Figure (7-12) show the performance of the algorithm in selecting the best network considering the QoS parameters like bandwidth, delay, jitter, loss and cost. The algorithm performance is evaluated for both weights (IEEE standard weights and Entropy weights).This algorithm performance shows that N1 (Wi-MAX) is the best network.
- From figure 13 and figure 20 the performance of Rank

Reversal Technique Algorithm (RRTA) and Parameter Based Network Selection Algorithm (PBNSA) is analyzed considering the original data in table1.Figure (14-19) and Figure (21-26) show the performance of these algorithms in selecting the best network considering the QoS parameters. The performance of these algorithms is evaluated for both weights(IEEE standard weights and Entropy weights).This algorithm performance shows that N1(UMTS) is the best network

- From figure27, the performance of Oliver Bloom Algorithm Method (OBAM) is analyzed considering the original data in table1.Figure (28-33) show the performance of the algorithm in selecting the best network considering the QoS parameters. The algorithm performance is evaluated for both weights(IEEE standard weights and Entropy weights).This algorithm performance shows that N4 (Wi-FI) is the best network
- From figure34, the performance of Similarity Based Network Selection Algorithm (SBNSA) is analyzed considering the original data in table1.Figure (35-40) show the performance of the algorithm in selecting the best network considering the QoS parameters. The algorithm performance is evaluated for both weights. This algorithm performance shows that N5(Wi-MAX) is the best network
- Similarly in figure (41-45) shows the efficiencies of all the five proposed algorithms are evaluated.
- In table 3 and table 4 in section 6 summarizes the performance of all the five algorithms. Results show the efficiencies of all the five algorithms based on various parameter criteria are calculated for both Standard Weights and Entropy weights.

CONCLUSION

In this paper, five novel vertical handoff algorithms EDBNS, RRTA, PBNSA, OBAM, SBNSA are proposed and compared with each other. The simulation results display that the performance of these algorithms are affected by the allocated weight vector. According to the analysis and simulation results, the five algorithms can achieve the satisfactory performance in selecting the best network to which handoff is to be performed, considering all the QoS criteria i.e. bandwidth, delay, jitter, loss and cost. The work done in this paper explores the multi-criteria approach based on QoS which is used for initiating vertical handoff. The analysis suggests that OBAM algorithm is the most efficient algorithm with 85% efficiency (42%more than other algorithms) when both standard weights and entropy weights are considered. The work results also show that the PBNSA algorithm is better than the other three proposed algorithms with an efficiency of (43%).For future work, more comparisons with other vertical handoff methods can be further discussed and other techniques to solve the decision problem can also be taken into account.

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