CHAPTER 6
COMPARISON OF ALGORITHMS PERFORMANCES

6.1 INTRODUCTION
In this research work, functional Back propagation algorithm, Locally weighted projection regression and Fuzzy logic have been implemented. All the algorithms are able to train the lock status and provide lock as and when required by the transaction on objects. The performance of the algorithm have been compared based on the following criteria.

1. Locking time for each object
2. Releasing time for each object
3. Total Locking time for each transaction group
4. Total Releasing time for each transaction group.
5. Computation complexity
6. Memory space occupied

6.2 RESULT COMPARISONS
A comparative performance of FUBPA / LWPR /FL for Fork (Figures 6.1 -6.4) and Bolted connection (Figure 6.5 -6.8) and Bearing (Figures 6.9– 6.12) are presented. FUBPA takes more locking time and FL takes least locking time. FUBPA takes more releasing time and FL takes least releasing time.
6.2.1 FORK DRAWING

**Fig. 6.1** Locking time for each object in Fork using FUBPA/LWPR/FL

**Fig. 6.2** Releasing time for each object in Fork using FUBPA/LWPR/FL
Fig. 6.3 Total Locking time for each transaction group in Fork using

FUBPA/LWPR/FL

Fig. 6.4 Total Releasing time for each transaction group in Fork

using FUBPA/LWPR/FL
6.2.2 BOLTED CONNECTION DRAWING

**Fig. 6.5** Locking time for each object in Bolted connection using FUBPA/LWPR/FL

**Fig. 6.6** Releasing time for each object in Bolted connection using FUBPA/LWPR/FL
Fig. 6.7 Total Locking time for each transaction group in Bolted connection using FUBPA/LWPR/FL

Fig. 6.8 Total Releasing time for each transaction group in Bolted connection using FUBPA/LWPR/FL
6.2.3 BEARING DRAWING

![Graph showing locking time for each object in Bearing using FUBPA/LWPR/FL.](image)

Fig. 6.9 Locking time for each object in Bearing using FUBPA/LWPR/FL

![Graph showing releasing time for each object in Bearing using FUBPA/LWPR/FL.](image)

Fig. 6.10 Releasing time for each object in Bearing using FUBPA/LWPR/FL
Fig. 6.11 Total Locking time for each transaction group in Bearing using FUBPA/LWPR/FL

Fig. 6.12 Total Releasing time for each transaction group in Bearing using FUBPA/LWPR/FL
### Table 6.1 Overall time consumed for one transaction object

<table>
<thead>
<tr>
<th>Performance metric for concurrency control</th>
<th>FUBPA</th>
<th>Fuzzy Logic</th>
<th>LWPR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Locking time for each object</td>
<td>High</td>
<td>Low</td>
<td>Least</td>
</tr>
<tr>
<td>Releasing time for each object</td>
<td>High</td>
<td>Low</td>
<td>Least</td>
</tr>
<tr>
<td>Total locking time for each transaction group</td>
<td>High</td>
<td>Low</td>
<td>Least</td>
</tr>
<tr>
<td>Total releasing time for each transaction group</td>
<td>High</td>
<td>Low</td>
<td>Least</td>
</tr>
<tr>
<td>Reason for High / Low / Least</td>
<td>Training is based on convergence criteria</td>
<td>Training is based similarity between successive outputs</td>
<td>One time presentation of all the patterns</td>
</tr>
<tr>
<td>Choice of algorithm for implementation in concurrency control</td>
<td>Not preferred</td>
<td>Less preferred</td>
<td>Most preferred</td>
</tr>
</tbody>
</table>
6.3 SUMMARY

This chapter presents the comparison of the performances of FUBPA, LWPR and FL for locking and unlocking of transactions of objects in Fork, Bolted connection and Bearing. The FL requires less time in granting locks and unlocking of transactions when compared to that of FUBPA and LWPR. Chapter 7 presents the summary of the research work.