













NSGA-II with key machines for FJSSP and DJSSP. For every instance we have tabulated the values of Makespan and Starting time deviation. We have analyzed the tabulated data and concluded that for all the instances in FJSSP and DJSSP that use the proposed NSGA-II algorithm with key machines have shown tremendous increase in makespan and starting time efficiency in comparison to the classical NSGA-II algorithm, which leads to enhanced performance of the system.

## VII. CONCLUSIONS AND FUTURE WORK

This current paper elaborates in details of the proposed social network analysis method and multi-objective based NSGA-II evolutionary algorithm to solve the Flexible and dynamic job shop scheduling problems. To find the performance of the proposed approach and to improve the performance of the manufacturing system two major performance measures such as scheduling efficiency i.e., makespan and scheduling effectiveness i.e., starting time deviations are measured. Hence, the job shop scheduling is computationally complex and well proved NP-hard in nature it is necessary to handle with evolutionary algorithm based approach. Here, we have identified an NSGA-II algorithm to solve the above mentioned problem. However, the identified problem is much complex than the general job shop because the uncertainty in job arrival is considered one should take care of key machines identification. The proposed social network analysis method helps to identify the key machines dynamically rather than random thus the considered performance measure is enhanced. Moreover, with classical NSGA-II algorithm the key machines effectiveness is identified. Experimental results shows that the proposed approach show its consistency. Further work may include identification of more problems to find the effectiveness of the proposed methodology.

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