Conclusion

The theory of grammar systems is an interesting and a deeply investigated area of formal language theory. The study of various grammars like pure grammars, pattern grammars, context-free grammars, regular grammars etc. and grammar systems like parallel communicating grammar systems and cooperating distributed grammar systems have motivated investigators to search for a new grammar. This new grammar is named as synchronized and non-synchronized pure pattern grammar. Several results are formulated to study the properties of this grammar. This synchronized pure pattern grammar is considered in parallel communication along with filters and splicing rules. Three algorithms to learn subclasses of synchronized pure pattern languages using the restricted subset queries and superset queries have been developed. In fact, the class considered for learning is the family of synchronized pure pattern languages generated by synchronized pure pattern grammars with a single pattern. An algorithm using prefix and suffix queries to learn parallel communicating pattern grammar system is also introduced. Also simple splicing grammar systems are learnt using subset and superset queries. A variant in cooperating distributed grammar system by using pattern grammars as components is studied.
The work has been organized into seven chapters as follows:

**Introduction** is devoted for discussion of properties of existing grammars and grammar systems available in the literature and different features are discussed.

**Chapter 1** presents two modes of derivation, namely, synchronized and non-synchronized, for pure pattern grammar. Many properties like inclusion, closure, decidability are given.

**Chapter 2** discusses parallel communicating synchronized pure pattern grammar systems in which the concept of filter is introduced.

**Chapter 3** presents an extension of parallel communicating synchronized pattern and pure pattern grammar systems in which four simple splicing rules viz. \(<1,3>\), \(<1,4>\), \(<2,3>\) and \(<2,4>\) are used.

**Chapter 4** presents (i) three learning algorithms for subclasses of the family of synchronized pure pattern language, with time analysis, (ii) learning algorithm for parallel communicating synchronized pure pattern grammar systems, (iii) learning algorithm for splicing grammar system.

**Chapter 5** deals with the scope of using pattern grammars in cooperating distributed grammar system. The concept of learning is done for a subclass of cooperating distributed pattern grammar system.

**Conclusion** presents a detailed discussion of the above work.