

Model Checking
Prof. B. Srivathsan
Department of Computer Science and Engineering
Indian Institute of Technology- Madras

Lecture – 49
Summary...

(Refer Slide Time: 00:06)

Summary

- ▶ **Module 1:** Rewrite CTL using EX, EU and EG
- ▶ **Module 2:** Algorithms for EX, EU and EG
- ▶ **Module 3:** Labelling algorithm
- ▶ **Module 4:** State-space explosion

This brings us to the end of unit 10 on algorithms for CTL. Let me summarise what we have seen in this unit. In module 1, we first rewrote CTL formulae using just EX, EU and EG constructions. It was called the existential normal form. Once we did this in module 2, we get algorithms for model checking the simple formulae EX, EU and EG and in module 3, we get generic algorithm.

It starts to label the simplest sub formulae of a given CTL formula and step by step it implements the algorithms for EX, EU and EG and finally it labels the states where the given formula is true. In module 4, we talked about a phenomenon called state space explosion. As the number of variables in the NuSMV code increases, the number of states of the transition system given by that NuSMV code increases by a multiplicative factor.

Model checking tools have to tackle this problem with extent possible. The last 10 units have end to give a broad picture of model checking and give you some familiarity with the logics LTL and CTL. We have also seen model checking algorithms for LTL and CTL. See you next week with a different set of lectures.