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Co-ordinators : Prof. Tanmoy Chakraborty, Prof. Soumen Chakraborti

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Lecture 9 - 'Guess and verify' paradigm for nondeterminism

Lecture 10 - NFA's with epsilon transitions

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Lecture 12 - Construction of a regular expression for a language given a DFA accepting it. Algebraic closure properties of regular languages

Lecture 13 - Closure properties (Continued...)

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Lecture 18 - Application of Myhill-Nerode theorem. DFA minimization

Lecture 19 - DFA minimization (Continued...)

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Lecture 21 - Languages generated by a cfg, leftmost derivation, more examples of cfgs and cfls

Lecture 22 - Parse trees, inductive proof that L is $L(G)$. All regular languages are context free

Lecture 23 - Towards Chomsky normal forms: elimination of useless symbols, analysis of reachable symbols, generating nonterminals, order of substeps matter

Lecture 24 - Simplification of cfgs continued, Removal of epsilon productions: algorithm and its correctness

Lecture 25 - Elimination of unit productions. Converting a cfg into Chomsky normal form. Towards pumping lemma for cfls

Lecture 26 - Pumping lemma for cfls. Adversarial paradigm

Lecture 27 - Completion of pumping lemma proof. Examples of use of pumping lemma. Converse of lemma does not hold. Closure properties of cfls

Lecture 28 - Closure properties continued. cfls not closed under complementation

Lecture 29 - Another example of a cfl whose complement is not a cfl. Decision problems for cfls

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Lecture 34 - Turing machines (TM): motivation, informal definition, example, transition diagram

Lecture 35 - Execution trace, another example (unary to binary conversion)

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Lecture 38 - Simulation of multitape TMs by basic model. Nondeterministic TM (NDTM). Equivalence of NDTMs with deterministic TMs

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Lecture 42 - Separation of recursive and r.e. classes, halting problem and its undecidability

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Co-ordinators : Prof. Phalguni Gupta

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