

CMPE 350 - Spring 2017

PS 11 - 09.05.17

4.30 Let A be a Turing-recognizable language consisting of descriptions of Turing machines, $\{\langle M_1 \rangle, \langle M_2 \rangle, \dots\}$, where every M_i is a decider. Prove that some decidable language D is not decided by any decider M_i whose description appears in A . (Hint: You may find it helpful to consider an enumerator for A .)

- Given an example of a language L such that L is co-Turing recognizable but its complement is not.
- Prove that the language $\{\langle M, w, q \rangle \mid M \text{ is a Turing machine which visits state } q \text{ during its execution when started with input string } w\}$ is undecidable.
- Show that the set of undecidable languages are closed under complementation.
- Some exam questions