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SS 12

Exercises for Limits of Computational Learning

<http://www.mpi-inf.mpg.de/departments/d1/teaching/ss12/learning/>

Assignment 10

Deadline: Thu 26.7.2012, 10am

This exercise sheet studies language learning.

Exercise 1 (4pts) Let L be a computable language. Show that $\{L \cup D \mid D \text{ finite}\}$ is **TxtGEx**-learnable.

Exercise 2 (4pts) Let L be a computably enumerable language. Show that $\{L \cup D \mid D \text{ finite}\}$ is **TxtGBC**-learnable.

Exercise 3 (4pts) Let $\mathcal{L} = \{L \neq \emptyset \mid W_{\min L} = L\}$. Show that \mathcal{L} is **TxtGEx**-learnable; then show that, for each computably enumerable L , there is a finite variant L' of L such that $L' \in \mathcal{L}$.

Exercise 4 (4pts) Let $\mathcal{L} \in \tau(\mathbf{Cons})\mathbf{TxtGEx}$. Show that, for all $L \in \mathcal{L}$, L is decidable (that is, there is an algorithm to decide for any x whether $x \in L$). Hint: For a (consistent) learner h for a language L , h has a locking sequence on L .