Foreword to Machine Didactics :: On Peer Learning of Artificial and Human Pupils

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HMPL can take place iff $H_{\Pi} < M_{\Pi} \land M_{\sigma} < H_{\sigma}$ The goal of HMPL is a mutual "didactic equilibrium" $H_{\Pi} = M_{\Pi} \land M_{\sigma} = H_{\sigma}$



Prior to HMPL-C₁-E₁,
a pupil *H* can name a
picture but is unable
to read its written
label.



After HMPL-C₁-E₁, *H* is able to correctly read all words contained in D_1 . Thus, *H* acquired σ_1 .

 $\Pi = reading$ $\sigma = speech$ recognition





Prior to HMPL-C₁-E₁, a machine *M* solely contains picture-text association dataset D_1 but is unable to process speech.



After HMPL-C₁-E₁, *M* is able to classify *H*'s pronounciations of the words in *M*. Thus, *M* acquired Π_1 .



earning



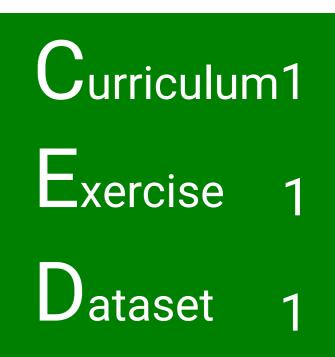


Thus, HMPL-C₁-E₁ leads to increase in *H*'s faculty of reading while *M* now has more accurate ASR model.

<u>M helps H to acquire Π while H helps</u> <u>M to acquire σ.</u> <u>Thus, H and M are</u> <u>peers.</u>



Peer learning leads to win-win situation for both organic learner *H* as well as for artificial learner *M*.



Other HMPL curricula are possible, provided that one:

starts small
posists Zones of Proximal Development **Abstract** Process of human learning has many features in common with the process of machine learning. This allows for creation of human-AI tandems or smaller groups where all members of the tandem or a group learn and develop. Consistently with Vygotskyan and Piagetian theories of learning and role which peers and intersubjective relations play in such theories, we hypothesize that curricula can be established whereby human and artificial learnings collaboratively learn together, resulting in a win-win situation for both organic and anorganic agents involved.





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