

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

Prof. Daniel Hromada, PhD.
daniel@udk-berlin.de

HMPL can take place iff

$$H_{\Pi} < \sim M_{\Pi} \wedge M_{\sigma} < \sim H_{\sigma}$$

The goal of HMPL is a mutual "didactic equilibrium"

$$H_{\Pi} = \sim M_{\Pi} \wedge M_{\sigma} = \sim H_{\sigma}$$

H

uman

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 con-
tained in *D*₁. Thus, *H*
acquired σ_1 .

Π = reading
 σ = speech
recognition

M

achine

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 pronunciations
of the words in *M*.
Thus, *M* acquired Π_1 .

P

eer


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



L

earning

M helps *H* to ac-
quire Π while *H* helps
M to acquire σ .
Thus, *H* and *M* are
peers.



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

Curriculum1
Exercise 1
Dataset 1

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.