SARASWATI AI
Humanitarian AI: Superhuman Teacher
ALL OF EDUCATION, FOR ALL

A PREPRINT

Vincent Boucher[*]
MONTRÉAL.AI
Intelligence Foundation Charity
Montreal, Quebec, Canada
`info@montreal.ai`

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ABSTRACT

ALL OF EDUCATION, FOR ALL. *For the purpose* of achieving all of education for all, and to inspire those who will shape the 21st Century, the Intelligence Foundation is openly developing a superhuman teacher (*Saraswati AI*) and an agent learning to orchestrate synergies (*Polymatheia AI*).

Saraswati AI is a novel, collaborative and open humanitarian AI project developed by the people, for the people. The Intelligence Foundation is preparing to offer academic training and conferences, prizes and recognitions and open research and publications.

> "(. . .) in full and equal opportunities for education for all (. . .)" — UNESCO's Constitution

Technology : *#CurriculumLearning*, *#DeepLearning*, *#MCTS*, *#MetaLearning*, *#OpenAIGym*, *#Neuroevolution*, *#ReinforcementLearning*, *#SelfAttention*, *#SelfSupervisedLearning*, *#SymbolicAI*

➡ Expected Beneficiaries : 100 million people.

➡ GitHub : `https://github.com/intelligencefoundation/SaraswatiAI`

➡ Technology Readiness Level : TRL 2

Invite link to join MONTREAL.AI on *Slack* to help people coordinate `https://join.slack.com/t/montrealai/shared_invite/zt-f3586fu9-TsgE5tW5b8uE3cGmtrSgMw`.

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[*]President of the Intelligence Foundation Charity and Founding Chairman at MONTRÉAL.AI.

1 Preliminary Overview of Potentially Useful Technologies

❖ *The Consciousness Prior*, Yoshua Bengio, 2019: `https://arxiv.org/abs/1709.08568v2`.
❖ *Discovering Symbolic Models from Deep Learning with Inductive Biases*, Cranmer et al., 2020: `https://arxiv.org/abs/2006.11287`.
❖ *Designing neural networks through neuroevolution*, Stanley et al., 2019: `https://www.nature.com/articles/s42256-018-0006-z.pdf`.
❖ *AI-GAs: AI-generating algorithms, an alternate paradigm for producing general artificial intelligence*, Jeff Clune, 2019: `https://arxiv.org/abs/1905.10985`.
❖ *Predicting What You Already Know Helps: Provable Self-Supervised Learning*, Lee et al., 2020: `https://arxiv.org/abs/2008.01064`.
❖ *Illuminating search spaces by mapping elites*, Mouret, J.-B. and Clune, J., 2015: `https://arxiv.org/abs/1504.04909`.
❖ *Combining Deep Reinforcement Learning and Search for Imperfect-Information Games*, Brown et al., 2020: `https://arxiv.org/abs/2007.13544`.
❖ *Distribution Augmentation for Generative Modeling*, Jun et al., 2020: `https://proceedings.icml.cc/static/paper_files/icml/2020/6095-Paper.pdf`.
❖ *Evolving Machine Learning Algorithms From Scratch*, Real et al., 2020: `https://arxiv.org/abs/2003.03384`.

� Searching and Learning in the knowledge space with MCTS and Deep Reinforcement Learning.
➝ Usage of functions which modify the target density to enable aggressive data augmentations.
➝ Objective function design: Directly optimize for what we want.

> "*The scientist is not a person who gives the right answers, he's the one who asks the right questions.*" — Claude Lévi-Strauss