Letter of Intent and Previous Work

D.Gueorguiev, 6/16/2023

I am looking into an implementation of semantic simulation mechanism

using reinforcement learning. Here are my preliminary notes on the semantic simulation process:

https://github.com/dimitarpg13/aiconcepts/blob/master/docs/OnTheNeedofDynamicSimulationWhen

ModelingInteractionsOfSemanticStructures.pdf

https://github.com/dimitarpg13/aiconcepts/blob/master/docs/ModelingAttractiveRepulsiveForcesInSe

manticProperties.pdf

https://github.com/dimitarpg13/aiconcepts/blob/master/docs/ReinforcementMechanismInSemanticStr

uctureModels.pdf

https://github.com/dimitarpg13/aiconcepts/blob/master/docs/SemanticTemplates.pdf

https://github.com/dimitarpg13/aiconcepts/blob/master/docs/PracticalExamplesUsingSemanticSimulati

onWithRL.pdf

Additionally, my interests include mathematical modeling via

convex and combinatorial optimization, graph theory and dynamic programming algorithms. Interested

in using probabilistic methods for creating suitable estimators and root cause analysis.

Here are few repos representing my interests in those topics. All these repos are work in progress and will be updated periodically.

https://github.com/dimitarpg13/reinforcement\_learning\_and\_game\_theory

https://github.com/dimitarpg13/graphs\_and\_dynamic\_programming

https://github.com/dimitarpg13/probabilistic\_machine\_learning

https://github.com/dimitarpg13/learning\_bayesian\_networks/blob/main/docs/LearningBayesianNetwo

rks\_part1.pdf

https://github.com/dimitarpg13/root\_cause\_analysis\_and\_model\_checking

https://github.com/dimitarpg13/transformers\_intro

My coding experience involve python, C++, C, Java.

Here are samples of my C++ code from past endeavors:

https://github.com/google/or-tools/compare/stable...dimitarpg13:ortools:

dpg/PWL\_solver\_stable\_py2.7\_gtest\_scipV6

https://github.com/dimitarpg13/testcode/blob/master/fraction.cpp

https://github.com/dimitarpg13/testcode/blob/master/fraction\_mt.cpp

https://github.com/dimitarpg13/testcode/blob/master/fraction\_bigint.cpp

https://github.com/dimitarpg13/cpp\_testcode/tree/master/SudokuQlik/src

And here are relevant documents to software design, architecture, coding techniques and design

patterns:

https://github.com/dimitarpg13/BigIndex/blob/main/PresentationDGueorguiev2018.pdf

https://github.com/dimitarpg13/InsideTensorflow2Source/blob/master/Understanding%20Tensorflow

%202%20source%20code.pdf

https://github.com/dimitarpg13/UnderstandingPythonEcosystem

https://github.com/dimitarpg13/inside\_cpp\_object\_model

And here are few repos about C++ language details and features:

https://github.com/dimitarpg13/cpp\_effective\_modern

https://github.com/dimitarpg13/cpp\_move\_semantics

https://github.com/dimitarpg13/cpp\_templates\_complete\_guide

https://github.com/dimitarpg13/cpp\_random\_pieces