

## Goal

The goal is to attempt solving AI.

## Details

The idea is to create an infrastructure, in which programs will be generated by previous generation programs, be evaluated against different tasks, and create future generation programs.

## Project budget, phase I

Task	Hours (human labour)	Necessary skills
Choose a flexible, fast language of implementation that supports just-in-time compilation: Java Script, Julia or something else?	50 hours	PP / GA / NN / GM
Implement a program X that samples other simple programs using some simple adapted grammar.	50 hours	PP / GA / GM
Improve the grammar such that program X is in the prior of itself.	50 hours	PP / GA / GM
Implement a sub-program Z that can randomly generate a new program, given any two random programs. Have program Z in the prior of X as well.	50 hours	PP / GA / GM
Support complex data types (including lists, dictionaries, sets, matrices, words and texts)	100 hours	PP / GA / GM
Build a set of tests such that program candidates might be evaluated against them: 1) Trading (FOREX, etc.), 2) Natural language processing tasks, 3) Vision and object recognition problems, 4) Data archiving, 5) Multiple choice questions, 6) Simple random dialogs.	50 hours 100 hours 100 hours 50 hours 150 hours 200 hours	Side expert is needed GM NN / side expert Side expert Side expert GM / side expert
Create an infrastructure to run tests such that individuals are being evaluated, and only best survive within time.	150 hours	GA
Find clusters to run and/or	100 hours	Side expert /

Run on EC2 clusters.	200 hours	Internal SE
Report results in a paper and in a nice looking report with cool pics.	100 hours	Side expert / internal expert

## Project budget, phase II

Task	Hours (human labour)	Necessary skills
Find and clean as many as possible source code pieces in the Internet, that are in the prior of the original grammar.	200 hours	PP / GA / NN / GM
Improve the original grammar to support as many as possible pieces.	300 hours	GA / NN / GM
Teach a deep neural network to sample programs similar to those code pieces.	200 hours	NN
Put the taught neural network as a sub-program Z' such that program X can use Z' to generate/adjust programs.	100 hours	PP / GA / GM
Re-run experiments.	150 hours	Internal SE
Report results.	100 hours	Side expert / internal expert

## Team

Required research skill groups:

- 1) Programming languages (PP).
- 2) Genetic algorithms / ideally genetic programming (GA).
- 3) Neural networks (NN).
- 4) Generative modelling, with experience in NLP (GM).

All team members should be good software engineers.

For the implementation, a few excellent software engineers (SE) are necessary.

## Required labour / money resources

Total hours required: 2,550 hours.

Number of members per each research skill group: 2.

Should be doable in:  $2,550 \text{ hours} / (2 \text{ persons} * 4 \text{ groups} * 21 \text{ work days} * 6 \text{ hours}) * \text{Pi} = \text{about } 8 \text{ months.}$

Project salary per person per month:  $180,000 \text{ pounds} / 12 = 15,000 \text{ pounds.}$

Project expenses: 15,000 pounds \* 8 persons \* 8 months \* Pi = 3,014,400 pounds.

## **Why trading?**

It would be cool to create a completely independent AI agent.

An agent that can trade on a stock exchange, earn money and run its own EC2 instances.

Id est, be completely independent of any other human being (though still be dependent on human infrastructure, i.e. Amazon instances, Internet, power, the institution of law, etc.).

## **Will it work?**

Unlikely, but there is a chance!

## **Disclaimer. Is AI dangerous?**

Extremely dangerous. Proper safety measures should be followed. Thanks to organisations that exist that study risks and work on preventing them.

## **Would like to (co-)fund?**

Email Yura: [yuraperov@gmail.com](mailto:yuraperov@gmail.com).

(At the current stage of my life, I can commit to this up to 2 hours per week.)

## **Would like to start participating now, smart and know how to work independently?**

Email Yura.