Ali Rahemtulla

Algon33 | username | mysite.com | algon33.ar@gmail.com | +44.7487.39.6660

Summary

This CV was generated with the aid of GPT-3 in a custom text editor. I have experience with a variety of programming languages and frameworks, and I am particularly interested in machine learning. In my spare time, I enjoy working on personal projects, such as my text editor which makes use of GPT-3. I'd like to create interesting and useful software.

Education

2015 - 2019 MPhys (Physics) at **University of Manchester** (First Class)

Projects

Language Model Enhanced Text Editor

I developed a language model enhanced text editor using Tkinter and Python.[1] The editor interfaces with OpenAI's API to generate completions of text, summaries, critiques and automated story generation which can be used to create a screenplay. My aim is to make something like codex, but for writing. Ideally, I'd be able to generate likely reader responses, re-arrange piece-meal notes into a coherent organization and provide question answering capabilities to aid research.

Deep Reinforcement Learning Network

When I began studying deep learning a few years ago I wanted to understand what an important result in the field looks like. Which is why I re-implemented Deepmind's original deep Q-network with experience replay.

Summary of AlphaCode Paper

Link to Article

To understand AlphaCode I wrote an explanation of its advances for a technical audience. AlphaCode was built on a variety of techniques, some well known like ensembles, others less so like GOLD. But most of its performance over state of the art came from the high quality data-set DeepMind made, underscoring the importance of data in training. If some sort of self play could produce quality code, then future AI's will have far more impressive performance.

Noun Generation Language Model

Link to Colab Notebook

I fine tuned a language model (GPT-2) to generate nouns (skill names in particular) from one of my favourite novels using Pytorch. To construct the dataset I used standard scraping libraries and some regular expressions to filter the text I got.

QBit-Heat Bath Simulations

Quantum computing is typically hindered by noise, but adiabatic quantum computing can have a constant time speed when there is a suitable level of noise present. Using techniques from the latest research, I investigated the optimal level and duration of noise by designing simulations in Mathematica. As I was resource constrained, I had to research ways to numerical methods, including generalisations of Newton-Raphson and variable-precision mesh-based interpolations.

[1] Which is what I used to critique this

Skills

Software	(Proficient) Python, Mathematica, Pytorch, Pygame, Tkinter, Numpy. (Familiar) Lisp, Git, Pandas.
Algorithmic Knowledge	Differential-Dynamic-Programming, Expectation-Maximization algorithms, convex optimization methods, decision trees, clustering methods, classical machine learning, deep learning and statistical physics.