CALIN MOCANU

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OBJECTIVE Developing neural network powered autonomous construction robots for Mars Base Alpha.

EDUCATION

UNIVERSITY OF OXFORD, BSC. PHYSICS, 1ST-CLASS HONOURS – **2011-2014**

Laboratory: building basic logic gates, electronic computer from components, using oscilloscopes, computer modelling of white dwarf stars, simulating fluid dynamics.

Project: Calibration device for lighting strike detection. Prototype research and implementation of an electric field simulator written with Python, NumPy and matplotlib.

DEEP LEARNING NANODEGREE FOUNDATION – **2017**

ORACLE DATABASE SQL CERTIFIED EXPERT – **2011**

WORK HISTORY

OXFORD ASSET MANAGEMENT, DEVELOPER/RESEARCHER – **2014-2018**

Researched and implemented value strategy trading *a billion dollars of assets*. Built database combining *7 sources* of earnings and analyst recommendation. Designed API to access cleaned and hedge adjusted stock price data. Big data text analysis on SEC filings. Developed a principled portfolio optimization algorithm. Developed a returns visualization webtool for rapid research and interaction with new datasets.

INDEPENDENT PROJECTS

Self-balancing pendulum. Robot built on a Raspberry PI using servos and an IMU to balance itself upright. The controller uses the actor-critic reinforcement learning algorithm implemented in TensorFlow and communicating commands and sensor data via WebSocket. – 2018

Cell membrane simulation to analyze the jamming-unjamming transition. Built on Observable using ES6 JavaScript and d3. – 2018

PotholeCoin prototype; a crowdfunding app aimed at fixing potholes. – 2018

Personal website built on the Google App Engine platform. – 2011

Simulation of fish group movement using, at the time, the new Canvas HTML5 element. – 2011

Artistic tree swinging in the wind through seasons. – 2011

Multibody gravity simulator, formation of the solar system. – 2011

Games: Snake game using C++ and SFML. Solar system asteroids dodging game in Flash. – 2008

SKILLS

Languages: **English (C2),** Romanian (C2), **Mandarin (A2)**

Programming languages: **C++, Python, JavaScript**, HTML, CSS, SQL, Rust, Haskell

Libraries/tools: T**ensorFlow, d3, NumPy, git**, pandas, SciPy, matplotlib, pybind11, react, WebSocket, boost, Lodash, IPython/Jupyter, nodejs, npm, pip, Beautiful Soup, requests, flask, PostgreSQL, Visual Studio Code, webpack, smbus2, json, Pillow, Pylint

Embedded: Raspberry PI, I2C, MPU-6050 gyroscope, PCA9685 pulsed width modulation, SNx4HC595

AWARDS

Exhibition (scholarship prize) from the University of Oxford – 2012

Gold medal in the National Olympiad in Informatics – 2010

Gold medal in the National Olympiad in Physics – 2009