Marian Longa

final year Oxford physics undergraduate with wide experience in computing

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Education

2016–present

BA Physics, University of Oxford
Year 3: so far taken "flows, fluctuations and complexity" and "quantum, atomic and molecular physics".
Year 2: quantum mechanics, statistical mechanics, kinetic theory, heat transport, thermodynamics, electromagnetism, optics, advanced classical mechanics, math methods.
Year 1: linear algebra, ODEs, vector calculus, classical mechanics, special relativity, electromagnetism, circuit theory, optics, complex numbers, waves, complex analysis.

2015–2016

Electrical and Electronic Engineering (1st year), Imperial College London
Year 1: mathematics, software engineering, digital & analogue electronics, intro to signals and communications, analysis of circuits, semiconductor devices, energy conversion. **First class.**

2013–2015

International Baccalaureate Diploma Programme, Spojena Skola Novohradska, Slovakia
Mathematics HL (7/7), Computer Science HL (7/7), Physics HL (7/7), English B HL (7/7), Economics SL (7/7), Slovak A SL (6/7). **Total score: 43/45 (top 2% worldwide).**

Research

Jul 2018 – present

Research Intern, Visual Geometry Group (VGG), University of Oxford
Supervisor: Dr. Joao Henriques
- Aim: Extend current methods of joint unsupervised learning of depth and ego-motion from video by learning camera intrinsics (focal length) per-video using a set of YouTube videos. This is a currently ongoing work with a plan to publish in one of the ML/vision conferences.
- My work: reading papers on depth, camera pose and optical flow estimation; understanding and extending the PyTorch code for SfM-Learner (Zhou, CVPR'17); implementing (in PyTorch) from scratch a novel method for learning intrinsics described by my supervisor (this ended up not being used); self-studying multiple-view geometry from A. Zisserman's book; creating a new dataset from YouTube videos of driving; attending reading groups and talks; attending meetings with Dr J. Henriques and Prof A. Zisserman.
- Technologies: PyTorch, Python, TensorBoardX, MATLAB, bash.

Jun–Aug 2017 (8-9 weeks)

Research Intern, Data Science Institute, Imperial College London
Supervisors: Axel Oehmichen, Dr. Miguel Molina-Solana
- Aim: use data science and machine learning to identify fake news tweets using the tweet metadata of thousands of tweets related to the 2016 US election.
- My work: data annotation; data visualisation and analysis; feature engineering; implementation, tuning and evaluation of different machine learning models; giving progress presentations to my supervisors; self-studying machine learning.
- Technologies: Python, Scikit-Learn, Multiprocessing, Matplotlib, NumPy, (a bit of TensorFlow and R) .

Projects

My website	A website that I made where I write about my programming related projects and experiences.
Snake game	A game I made in Java using OOP techniques which teaches children addition in a fun way, where the snake can only eat food which contains a number that is the sum of two numbers displayed on screen.
LCD library	I have written my own library in C which interfaces the communication between an LCD display and a PIC microprocessor, which it ended up being used by a random person in their own project.
Android app	An Android app for timing the brewing of tea I made in Java and published on Google Play, with 100+ installs and rating 4.3 (out of 5).
Sudoku solver	A program I made in PHP to solve Sudoku puzzles, inspired by my own solving techniques.

Languages

English (proficient), Slovak (proficient), German (intermediate), Chinese (beginner).