



Andrew James Turner

Curriculum Vitae

Education

- 2011–present **PhD in Electronic Engineering**, *University of York*, The application of Genetic Programming in the training of Artificial Neural Networks.
- 2008–2012 **Integrated Masters in Electronic Engineering**, *University of York*, *1st Class Honours with Distinction*.

Skills

- Technologies Artificial Intelligence, Machine Learning, Evolutionary Computation, Artificial Neural Networks, Biologically Inspired Computation, Statistical Data Analysis, Linux, git
- Languages C/C++, Java, Matlab/GNU Octave
- Other Full Clean Driving Licence

Employment

- 2015–present **Associate Lecturer**, *University of York*, York.
I teach and supervise undergraduate and post graduate students within the Electronic Engineering department. I lecture modules on data structures and algorithms, object oriented programming using Java and operating systems.
- 2013–2015 **Lab Leader / Demonstrating**, *University of York*, York.
I have taught on numerous courses at York including Biologically Inspired Computation, C Programming, Digital Electronics and Electromagnetic Wave Theory. The roles involved leading workshops and giving lectures.
- 2012–2013 **Software Consultant**, *ClearSky Medical Diagnostics*, York.
The work involved the early detection and classification of Parkinson's disease using data from non-invasive wireless sensors. My role involved the creation of a Java based media player which used VLC to play back video recordings of patients wearing these sensors. The tool enabled medical professionals to log symptoms of Parkinson's disease being displayed. These logs were then combined with the sensor data to train medical classifiers.
- 2011 **Summer Internship**, *Rolls-Royce*, Coventry.
My role concerned work on new methods for the early detection of faults in jet engines currently in operation. The work involved using MATLAB to learn the "signatures" of sensor recordings leading up to previous incidents; allowing for future early detection.

2010 **Summer Internship**, *Balfour Beatty Rail*, Derby.

The work focused on the production of detailed analysis of railway injuries and near misses which occurred during rail asset maintenance. The aim was to use the information to guide safer management and drive development of future safety products.

Professional Engagements

2014–present **Technical Workshop Coordinator**, *Early Career Researchers Forum*, Department of Electronics, University of York.

The Early Career Researchers Forum is a committee of PhD students and research associates who organise activities within the University of York's Electronics department. My specific role is the organisation of technical workshops which provide invaluable skills for strengthening the quality of research and providing softer skills related to a career in academia.

2014–present **Hackathon Organiser**, *NASA's International Space Apps Challenge*, York.

For two years I have been closely involved with organising York's International Space Apps Challenge event. This is a global annual hackathon, headed by NASA, which takes place over 48 hours. Around the world groups at over 100 locations tackle a number of global challenges and then their solutions compete on a national and international scale.

2014–present **Open Source Software.**

I am a big supporter and user of open source software. As a result I like to give back to the community when I can. The work I am most proud of, and is the most widely used, is my CGP-library. Cartesian Genetic Programming (CGP) is a technique I used extensively throughout my PhD. The CGP-library is an open source implementation of my research code written in C. The library, API and documentation is hosted at cgplibrary.co.uk/ and the development code is hosted with GitHub github.com/AndrewJamesTurner/CGP-Library. Please take a look to see my coding style, documentation ability and version control usage.

2013–2014 **Conference Committee Member**, *York Doctoral Symposium*, York.

The York Doctoral Symposium is an academic conference aimed towards, and organised by, PhD students within the fields of Computer Science and Electronic Engineering. In 2013 I served on the organising committee and in 2014 the program committee.

2014 **Academic Reviewer**, *Workshop on Computational Intelligence for Biomedicine and Bioinformatics*.

I reviewed papers for the workshop on Computational Intelligence for Biomedicine and Bioinformatics, Belfast, UK, 2014

Awards

2015 Best paper, York Doctoral Symposium Conference

2014 Highlighted paper, Artificial Intelligence and Simulation of Behaviour Conference

2013 Best Student Paper, Research and Development in Intelligent Systems Conference

2012 Examiners' Prize for Sustained Excellence throughout the Degree Program

References

Prof A. Hunt **Deputy Head of Electronics**, *University of York*, andy.hunt@york.ac.uk.

Dr J. Miller **PhD Supervisor**, *University of York*, julian.miller@york.ac.uk.

Dr S. Smith **Previous Employer**, *ClearSky Medical Diagnostics*, stephen.smith@york.ac.uk.

Mr N. Corbett **Previous Manager**, *Rolls-Royce*, nick.corbett@siemens.com.

Publications

- Journals Turner A J & Miller J F, **Neutral Genetic Drift: an Investigation using Cartesian Genetic Programming**, Genetic Programming and Evolvable Machines, 2015
- Turner A J & Miller J F, **Introducing a Cross Platform Open Source Cartesian Genetic Programming Library**, Genetic Programming and Evolvable Machines, 2014
- Turner A J & Miller J F, **NeuroEvolution: Evolving Heterogeneous Artificial Neural Networks**, Evolutionary Intelligence, 2014
- Proceedings Turner A J & Miller J F, **Recurrent Cartesian Genetic Programming Applied to Series Forecasting**, Genetic and Evolutionary Computation, 2015
- Turner A J & Miller J F, **Cartesian Genetic Programming: Why No Bloat?**, European Conference on Genetic Programming, 2014
- Turner A J & Miller J F, **NeuroEvolution: The Importance of Transfer Function Evolution and Heterogeneous Networks**, AISB Symposium on Computing and Philosophy, 2014
- Turner A J & Miller J F, **Recurrent Cartesian Genetic Programming**, Parallel Problem Solving from Nature, 2014
- Turner A J & Miller J F, **Recurrent Cartesian Genetic Programming Applied to Famous Mathematical Sequences**, York Doctoral Symposium on Computer Science & Electronics, 2014
- M A Lones, J E Alty, P Duggan-Carter, A J Turner, D R Jamieson & S L Smith, **Classification and characterisation of movement patterns during levodopa therapy for parkinson's disease**, Genetic and Evolutionary Computation Companion, 2014
- Turner A J & Miller J F, **Cartesian Genetic Programming encoded Artificial Neural Networks: A Comparison using Three Benchmarks**, Genetic and Evolutionary Computation, 2013
- Turner A J & Miller J F, **The Importance of Topology Evolution in NeuroEvolution: A Case Study Using Cartesian Genetic Programming of Artificial Neural Networks**, Research and Development in Intelligent Systems, 2013
- Tutorials Turner A J & Miller J F, **Cartesian Genetic Programming**. Genetic and Evolutionary Computation, 2015