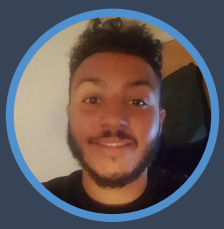
Bradley Morgan

Computational Neuroscience MSc Student

A tenacious and energetic 23 year old who is always seeking new opportunities to learn and challenge himself. Has a passion and deep interest for computer science and neuroscience!



bradley.morgan190@gmail.com

07492696798

Birmingham, UK

linkedin.com/in/bradleymorgan190

github.com/bradamorg007/Programming-Projects.git

EDUCATION

Msc Computational Neuroscience & Cognitive Robotics: Predicted Grade: 1st

University of Birmingham

09/2017 – 09/2019 *Uk*

Courses

- Grade 94/10: Java Software Workshop.
- Grade 89/100: Mind, Brain and Models.
- Grade 98/100: MATLAB Programming.
- Grade 78/100: Introduction to Computational Methods.

BSc Psychology & Cognitive Neuroscience: Awarded Grade: 1st

University of Leicester

09/2013 – 09/2016 *Uk*

Courses

- Grade: 75%: Cognitive Neuroscience dissertation
- Grade 72%: Cognitive Neuroscience
- Grade 74%: Behavioural Neuroscience
- Grade 86%: Perception & Cognition

WORK EXPERIENCE

Software Test Analyst

Prudential

03/2017 – 09/2017 *London*

Achievements/Tasks

- Software migration of Prudential's legacy systems this includes upgrades to Full Microsoft 365 package and Change control of major edits to Prudential's Inter & Intra net sites.

Software Test Analyst

Ocado Research & Development

12/2016 – 03/2017 *Andover*

Achievements/Tasks

- Responsible for conducting error detection tests/analysis along with software maintenance repairs, on both individual bots and the hive AI controller, named D.A.S.H.

Software Test Analyst

Capita

10/2016 – 11/2016 *London*

Achievements/Tasks

- ISTQB Foundation to Software Testing (pass mark of 85%). Intensive yet highly stimulating eight weeks of training.

SKILLS

Java Programming | MATLAB Programming | Python Programming | Statistical Data Analysis | Computational Modelling | Deep Learning | Genetic algorithms | Neuroevolution | Object orientated programming | Neuroscience | Hypothesis Testing | Neuroimaging | Data Visualization | Keras

PERSONAL PROJECTS

Machine learning (04/2019 – Present)

- Applying neuroevolution in concert with Autoencoder architectures to develop models which can adapt to the onset of unseen obstacles, when traversing simulated spaces.

NeuroImaging: Magnetoencephalography(MEG) (07/2018 – 03/2019)

- Detecting objective neural signatures for early stage visual integration in humans. Interplay between gamma band harmonics in generating oscillatory inter-modulation in the visual cortex.

INTERESTS

Music Technology | Piano | Theatre & creative writing | Surfing | skiing & snowboarding | IOS development | AI | Deep Learning

List of projects

Machine Learning:

Languages used: Javascript, python.
Libraries: tensor-flow, Keras, numpy, plotly, matplotlib.

- Applying Neuroevolution in concert with Autoencoder architectures to develop models that can adapt to the onset of unseen obstacles, when traversing simulated spaces.
- Building fully connected feedforward neural network library from scratch to classify the MNIST dataset.
- Planning to build a convolutional neural network to perform multi-labeled classification on several datasets from Kaggle.

NeuroImaging using magnetoencephalography(MEG):
Detection of objective neural signatures of the integration of visual information in the visual cortex of humans. Studying the Interplay between gamma band harmonics in generating oscillatory inter-modulation in the visual cortex.

Languages used: MATLAB

Responsibilities:

- Designing and coding the experimental paradigm.
- Integrating Matlab programs with NeuroMag 306 MEG system.
- Operating the MEG system during data collection.
- Data analysis:

Data cleaning Phase

- Implemented the independent component analysis algorithm to separate the multivariate signal produced by MEG sensors into additive subcomponents. This allowed me to identify and remove artefacts within the data such as eye blinks that produce large disruptive magnetic fields.

Analysis:

- Stimuli presented to participants had their luminance values oscillate from 0-255 at different frequencies that are not consciously detectable such as 65Hz and 72Hz, these are termed the fundamental frequencies.
- By implementing Fourier analysis across time, one can identify oscillations within sensor signals produced by the brain that are at the same exact frequencies as the fundamental frequencies externally presented. I then used time-locked analysis to assess if, how and where these fundamental frequencies would interact both linearly and non-linearly.
- Implanted Cluster based permutation test algorithm as a non-parametric method for inferential statistics.

Java:

- Implemented the insertion sort algorithm for sorting numbers and letter arrays.
- Implemented recursive programs for binary tree traversals.
- Implemented recursive programs to facilitate AVL trees that are self-balancing.
- Used my knowledge of object orientated programming to build a simple hotel room booking system, image manipulation system.

Future Projects:
- Build and integrate neural network and neuroevolution models using Keras with IOS apps.
- Build Machine learning model that can map human generated drumming(beatboxing) to MIDI.