Evripidis Gkanias

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Education

September 2018 – present

School of Informatics,

The University of Edinburgh, United Kingdom

Bio-mimetic Autonomous Systems (PhD)

Specialisation: Insect inspired learning mechanisms
Supervisor: Prof. Webb Barbara
Abstract: Modelling the insect mushroom body (MB) as a sequential reinforcement learning mechanism. Limited by biological constraints of the insect brain, we come up with a computational model of the MB, which integrates multiple modalities, creates (long- and short-term) associative memories and is able to recall them whenever the animal needs them.

September 2015 – August 2016

School of Informatics,
The University of Edinburgh, United Kingdom

Artificial Intelligence (MSc)

Grade: Distinction
Specialisation: Machine Learning.
Dissertation: "Data-driven adaptation of the evasion behaviour in fiddler crabs"
Supervisor: Prof. Webb Barbara
Courses: *Probabilistic Modelling and Reasoning*, *Machine Learning and Pattern Recognition*, *Reinforcement Learning*, *Neural Computation*, *Neural Information Processing*.
Award: UK/EU Master's Scholarship.
Activities:
Member of the Edinburgh University Sailing Club (EUSC).

September 2008 – July 2013

School of Informatics,
Aristotle University of Thessaloniki, Greece

Computer Science (BSc)

Grade: First-class honours
Specialisation: Information Systems.
Thesis: "Deep Learning Algorithms for Multi-label Data".
Supervisor: Ass. Prof. Tsoumakas Grigorios
Activities: Member of the Photographic Club.

Work experience

March 2017 – August 2018

The University of Sheffield, United Kingdom

Research Associate

I am responsible for investigating the information content of polarised light in relation to animal navigation - using machine learning and information theory - before using the outcomes to develop a technical specification / design for manufacture of a novel robot sensor. This is a joined work of the University of Edinburgh and the University of Sheffield.

September 2016 – February 2017

The University of Edinburgh, United Kingdom

Research Associate

I focus on trying to imitate the learning mechanism of the larval Drosophila, which creates associations among odours and tastes. The goal is to create such a mechanism in neural level and put it on a robot platform. The robot will try to find the gustatory source following the gradients of the associated odour.
This task is part of the "minimal" project.
(blog.inf.ed.ac.uk/minimal/)

June 2014 – August 2015

CERTH, Thessaloniki, Greece

Research Assistant

My main task was to implement a toolbox, using C# and the WPF subsystem, which could be used to analyse and compare human gestures, tracked using different capturing devices, i.e. Microsoft Kinect, Vicon, WIMUs. I also implemented an extension of it, which was compatible with Unity3D.
This task was part of the "RePlay" project.
(www.fp7-replay.eu)

Interests

Research	machine/reinforcement learning, insect brain, memory, computational neuroscience, mathematical modelling, time-series, multimodal integration, computer vision
Other	photography, sketching, music, sailing, travelling, reading

Technical skills

Advanced	NumPy, Keras, OpenCV, Matlab, Python, C#, C/C++, Git, LaTeX Probabilistic Machine Learning, Un/Supervised Learning, Reinforcement Learning, Computer Vision
Intermediate	Theano, TensorFlow, Simulink, weka, Linux, R, Java Information Theory

Posters

2019 **Robustness of a model of the insects' celestial compass in realistic conditions**
Gkanias, E., Scaria, A., Vladis, N. A., Risse, B., Mangan, M., & Webb, B. In International Conference on Invertebrate Vision, Bckaskog Slott, Sweden

2018 **Imitating the Drosophila Larval Learning Behaviour on a Robot**
Gkanias, E., Lagogiannis, K., & Webb, B. In Behavioral Neurogenetics of Drosophila Larva, Edinburgh, United Kingdom

2018 **Neural models of ant navigation in a realistic 3D world**
Pacella, D., Risse, B., Gkanias, E., Mangan, M., & Webb, B. In International Comference of Neuroethology, Brisbane, Australia.

Continuous training

2019 **International Conference on Invertebrate vision**
CONFERENCE
Lund University

2018 **The Maggot Meeting**
CONFERENCE
The University of Edinburgh

2018 **CapoCaccia Workshop**
WORKSHOP
iniForum, University of Zurich

2017 **The Living Machines**
CONFERENCE
Stanford University, CA, USA

2016 **Creative Applications of Deep Learning using TensorFlow**
ON-LINE COURSE
Kadenze Academy, Parag K. Mital.

2014 **Getting and Cleaning Data**
ON-LINE COURSE
Coursera, Prof. Jeffrey Leek - John Hopkins University.

2013 **Control of Mobile Robots**
ON-LINE COURSE
Coursera, Prof. Magnus Egerstedt - Georgia Institute of Technology.

2013 **Heterogeneous Parallel Programming**
ON-LINE COURSE
Coursera, Prof. Wen-mei W. Hwu - University of Illinois.

Communication skills

GREEK Native speaker

ENGLISH Oral: advanced – Written: advanced

Publications

2019 **From skylight input to behavioural output: a computational model of the insect polarised light compass**
Gkanias, E., Risse, B., Mangan, M., & Webb, B. PLoS Computational Biology

2017 **Predator Evasion by a Robocrab**
Stouraitis, T., Gkanias, E., Hemmi, J. M., & Webb, B. In Conference on Biomimetic and Biohybrid Systems (pp. 428-439). Springer, Cham.

Academic projects

2016 **Robocrab: Data-driven adaptation of the evasion behaviour in fiddler crabs (Master Thesis)**
We create a semi-supervised structure of neural network, inspired by the physiology of neurons in fiddler crabs, and train it to adapt the evasion behaviour of fiddler crabs on potential predators, solving a complicated visuomotor problem (developed in Python using the Theano/Tensorflow-based 'keras' library).

2016 **Modelling the skills of Go players**
We modelled the skills of a range of Go players, and we used an approximate inference method to predict the outcome of the Lee Sedol - AlphaGo game (developed in Matlab)

2015 **Handwritten digit recognition**
Develop deep convolutional and fully connected neural networks using Python, Cython and NumPy and train them to recognise digits using the MNIST database.

2013 **Deep Learning Algorithms for Multi-label Data (Bachelor Thesis)**
We extended a Java library implementing Restricted Boltzmann Machines and Deep Belief Networks and we used it to examine how these models perform in different multi-label task.

Activities

2016 **Junction Hackathon**
Winning price of the Skype's "Artificial Intelligence Driven Bots" challenge.

2016 **Data Science Game**
24^{th} place out of 143 teams.

2015 **Coastal Sailing Diploma**
2^{nd} best performance in school.

2013 **Community Teacher Assistant**
Coursera, Prof. Wen-mei W. Hwu class.

2008 **Linear and freehand drawing**
4^{th} best performance in school.