

EVRIPIDIS GKANIAS

Research Scientist in Computational Neuroethology

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👤 evgkanias

📍 University of Edinburgh, UK

WORK EXPERIENCE

Research Associate in Comp. & Neuromorphic Modelling

University of Edinburgh & University of Groningen

📅 June 2022 – present

📍 United Kingdom & Netherlands

👤 Advisors: **Prof. Barbara Webb** & **Prof. Elisabetta Chicca**

🔧 Explore the effectiveness of different forms of working memory constrained by the biology and nanotechnology hardware

🔧 Build an anatomically-accurate polarised light compass circuit

Research Associate in Computational Modelling

University of Sheffield & University of Edinburgh

📅 Mar 2017 – Aug 2018

📍 United Kingdom

👤 Advisors: **Dr Michael Mangan** & **Prof. Barbara Webb**

🔧 Investigate the celestial properties in context of animal navigation

🔧 Design a novel anatomically-constrained celestial compass

Research Assistant in Bio-robotics

University of Edinburgh

📅 Sep 2016 – Feb 2017

📍 United Kingdom

👤 Advisor: **Prof. Barbara Webb**

🔧 Study the learning mechanism of *Drosophila* larva

🔧 Build a robot that tries to find the gustatory source following the gradients of the associated odour

Research Assistant in Machine Learning

Centre for Research and Technology - Hellas (CERTH)

📅 June 2014 – Aug 2015

📍 Greece

👤 Advisor: **Dr Petros Daras**

🔧 Real-time evaluation of athletes' technique from gestures captured using multiple Microsoft Kinects and WIMUs or the Vicon system

🔧 Integrate into a video game using C# and Unity3D

SELECTED PUBLICATIONS

📄 Gkaniyas, E., Mitchell, R., Stankiewicz, J., Khan, S. R., Mitra, S., & Webb, B. 2023. *Celestial compass design mimics the fan-like polarisation filter array of insect eyes.* (under review)

📄 Gkaniyas, E., McCurdy, L. Y., Nitabach, M. N. & Webb, B. 2022. An incentive circuit for memory dynamics in the mushroom body of *Drosophila melanogaster*. *eLife* 11, e75611.

📄 Schwarz, S., Clement, L., Gkaniyas, E. & Wystrach, A. 2020. How do backward-walking ants (*Cataglyphis velox*) cope with navigational uncertainty? *Anim Behav* 164, 133–142.

📄 Gkaniyas, E., Risse, B., Mangan, M. & Webb, B. 2019. From skylight input to behavioural output: a computational model of the insect polarised light compass. *PLoS Comput Biol* 15, e1007123.

EDUCATION

PhD in Bio-inspired Robotics & Autonomous Systems

University of Edinburgh

📅 Mar 2023

📍 United Kingdom

📄 Insect neuroethology of reinforcement learning

👤 Supervisor: **Prof. Barbara Webb**

MSc in Artificial Intelligence

University of Edinburgh

📅 Aug 2016

📍 United Kingdom

🎓 with Distinction

📄 Data-driven adaptation of the evasion behaviour in fiddler crabs

👤 Supervisor: **Prof. Barbara Webb**

BSc (Hons) in Computer Science

Aristotle University of Thessaloniki

📅 Jul 2013

📍 Greece

🎓 Grade: first-class

📄 Deep learning algorithms for multi-label data

👤 Supervisor: **Prof. Grigorios Tsoumikas**

FUNDING & AWARDS

Percy Sladen Memorial Fund Grant

The Linnean Society of London

📅 Jun 2019

📍 Seville, Spain

🔧 Fieldwork experiments on desert ants

🔧 Test for vector-sequence memories during path integration

Robotics and Autonomous Systems - Centre for Doctoral Training Grant

Engineering and Physical Sciences Research Council (EPSRC)

📅 Sep 2018

📍 Edinburgh, UK

🏆 Awarded to the top 10 applicants

UK/EU Master's Scholarship






University of Edinburgh

📅 Sep 2015







📍 Edinburgh, UK

🏆 Awarded to the top 100 UoE entries

SELECTED ORAL PRESENTATIONS

-  *Multimodal skylight information improves the estimation of the celestial compass: insights from a hardware implementation.* At the International Conference on Invertebrate Vision. August 2023. Bäckaskog Slott, Sweden
-  *Memory dynamics in Drosophila's mushroom body: a computational view.* At the Neural Circuits and Behaviour of Drosophila. June 2023. Orthodox Academy of Crete, Greece
-  *How flies acquire, forget and assimilate memories: a computational perspective.* At the Mushroom body meeting. June 2021. Online
-  *From skylight input to behavioural output: a computational model of the insect polarised light compass.* At the International Navigation Conference. October 2019. Edinburgh International Conference Centre, United Kingdom
-  *Predator evasion by a Robocrab.* The Living Machines. July 2017. Stanford University, CA, USA

SELECTED POSTER PRESENTATIONS

-  *How the fan-shaped body can integrate differential familiarity for route following in desert ants.* At the conference on Structure and function of the insect central complex. October 2022. Janelia Research Campus, VA, USA
-  *How could the mushroom body and central complex combine for visual homing in insects.* At International Congress of Neuroethology. July 2022. Lisbon, Portugal
-  *An anatomically accurate circuit for short- and long-term motivational learning in fruit flies.* At the Cosyne Conference. March 2022. Lisbon, Portugal
-  *The incentive circuit of the fruit fly brain: a computational perspective.* At the Bernstein Conference. September 2021. Online
-  *Robustness of a model of the insects' celestial compass in realistic conditions.* At the International Conference on Invertebrate Vision. August 2019. Bäckaskog Slott, Sweden
-  *Imitating the Drosophila larval learning behaviour on a robot.* At the Maggot Meeting. October 2018. University of Edinburgh, United Kingdom

SELECTED TRAINING

Workshop on Insect Bio-inspired Technologies

[Royal Society of Edinburgh](#)

 17-18 Nov 2022  Edinburgh, United Kingdom

ASAB Winter 2022: Animal Movement



[Society for the study of Animal Behaviour](#)

 6-7 Dec 2022  Edinburgh, United Kingdom




CapoCaccia: Neuromorphic Engineering Workshop

[University of Zurich, ETH Zurich and the iniForum](#)

 Apr 2018 – May 2018  Sardinia, Italy

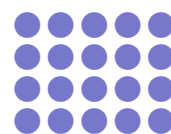
-  Work on the neuromorphic SLAM project using Brian2
-  Attach a DYNAPs neuromorphic chip on a robot and programme it to learn a map using a bumper sensor

RESEARCH INTERESTS

-  Biologically plausible mechanisms of **learning** and **memory** that allow interpretive **behaviour** in artificial agent
-  **Computational intelligence** that allows artificial agents to **navigate** in the challenging real-world
-  Processing **perception** in order to **maximise information** and create **hierarchical representations**

STRENGTHS

Bio-accurate AI
Computational Modelling
Information Theory
Python



Probabilistic Machine Learning

Reinforcement Learning

Robotics

Computer Vision

OpenCV


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TEACHING POSTS


Supervision of BSc & MSc projects


[University of Edinburgh](#)

 Sep 2016 - present  United Kingdom

 **Jiewen Deng** (BSc - 2021, MInf - 2022):
"Building a hexapod robot platform to test a vision-based insect navigation algorithm" — co-supervised

 **Xuechun Qiao** (MSc - 2020):
"Building a hexapod robot simulation to test vision-based insect navigation algorithms" — co-supervised

 **Yijie Chen** (MSc - 2020):
"Classifying individual ants from raw video data"

 **Komal Afzal** (MSc - 2019):
"Mimicking visual motion processing model of escape behaviour of a fiddle crab" — co-supervised

Tutor, Demonstrator & Marker

[University of Edinburgh](#)

 Sep 2018 - 2022  United Kingdom

 Introductory Applied Machine Learning

 Reinforcement Learning

QA & Computer Vision Expert

[University of Edinburgh](#)

 Jan - Apr 2020  United Kingdom

 Systems Design Project