UNIVERSITY of STIRLING

University of Stirling, Gabriela Ochoa

Short CV

Gabriela Ochoa is a Professor in Computing Science at the University of Stirling, Scotland, where she leads the Data Science and Intelligent Systems (DAIS) research group. She holds a PhD from University of Sussex, UK, and has held faculty and research positions at the University Simon Bolivar, Venezuela and the University of Nottingham, UK. Her research interests lie in the foundations and application of evolutionary algorithms and metaheuristics, with emphasis on adaptive search, fitness landscape analysis and visualisation. She has published over 120 scholarly papers (H-index 32), serves various program and organising committees, and was the Editor-in Chief for GECCO, 2017. She was associate editor of IEEE Trans. Evolutionary Computation and Evolutionary Computation, and is currently for ACM Transactions on Evolutionary Learning and Optimization. She is a member of the executive boards of the ACM interest group on evolutionary computation (SIGEVO), and the leading European event on bio-inspired computing (EvoSTAR).

Google Citations profile: https://scholar.google.co.uk/citations?user=9jBS1tEAAAAJ&hl=en
Homepage: http://www.cs.stir.ac.uk/~goc/
Email: gabriela.ochoa@stir.ac.uk

Research group

Data Science and Intelligent Systems (DAIS) research group: recently created, but rapidly expanding both in size and research themes, the group consists of 13 academics, 2 postdocs and 13 PhD students. The DAIS mission is to conduct interdisciplinary research to explore, develop, and apply search and optimisation methodologies, evolutionary computation, brain-inspired computational techniques, and signal processing to a wide range of real-world, data-driven problems. Current active projects involve analysis and visualisation of fitness landscapes (www.lonmaps.com), computational vision and image processing (http://vip.cs.stir.ac.uk), and contextual learning in humans and machines.

Projects

1. Visualisation and analysis of computational search spaces using network-based models with applications to machine learning problems. Our objective is to provide new insights into the structure of fitness landscapes and the trajectories of optimisation algorithms. Machine learning problems (including neural network training) can be seen as optimisation problems where an error surface needs to be minimised, or an accuracy function maximised, they can therefore, be analysed with our recently proposed network-based models
2. Evolutionary design of antibiotic treatments. The design of antibiotic treatments can be formulated as an optimisation problem, where the goal is to cure the patient (reduce the bacterial infection) while using the least amount of drug possible. In this project we will use a stochastic (mathematical) model of bacterial growth including both susceptible and resistant bacteria developed in our group, and combine it with powerful state-of-the art optimisation methods in order to design effective treatments. Important elements are robust optimisation in noisy environments, handling constraints and using/adaptive multi-objective algorithms.

About the university and the city

The University of Stirling was founded in 1967, and we have a beautiful and friendly campus. We have about 14,000+ students and1,500+ staff. 120+ nationalities are represented on campus and 20% of students are from overseas.

Stirling is a city in central Scotland, very close to both Glasgow and Edinburgh (no more than 3-0-40 minutes by train), and thus well connected with Europoe and the world. At the heart of Stirling old town, medieval Stirling Castle is on a craggy volcanic rock. On the Abbey Craig outcrop, the National Wallace Monument is a 19th-century tower. It overlooks the site of the 1297 Battle of Stirling Bridge, where William Wallace defeated the English.