SICSA Workshop on "Dynamics of biological networks: from nodes' dynamics to network evolution"

The workshop was held in the Informatics Forum, University of Edinburgh on 25-26/06/2013. The scientific focus of the workshop was on integrating techniques and ideas from dynamical systems modelling with statistical machine learning models of network inference, with a particular focus to applications in systems biology and bioinformatics.

Four invited talks were given by Dirk Husmeier (Glasgow), Olga Troyanskaya (Princeton), Heinz Koeppl (ETH) and Eric P. Xing (CMU). These were complemented by 8 contributed talks and 10 posters. The workshop was attended by 50 people (maximum capacity of the room; late applicants had to be turned away). A discussion session was held at the end of the first day which saw the participation of the majority of the attendees. The networking part of the programme saw a drinks reception alongside the poster session and a workshop dinner.

The technical content of the talks centred about methodologies and applications to reconstruct network structures and dynamical parameters in biological systems. Specific methodologies which were broadly employed included Bayesian inference, optimisation techniques, process algebras and search algorithms. A particular problem that was discussed in several talks was the possibility of non-stationary network structures/ parameters, and how this can be addressed with recent advances in statistical machine learning.

Approximately 60% of the audience came from Scotland, with attendees from many SICSA nodes (Edinburgh, Stirling, St Andrews, Heriot-Watt, and Glasgow). Other attendees came primarily from England (Cambridge, Southampton, Aston, Warwick, and Exeter), Europe (Germany, France, Netherlands, and Italy) and the USA (Harvard, Princeton, and CMU). The workshop was funded by a BBSRC International award to Guido Sanguinetti and by the SICSA modelling and abstraction theme.

It is hoped that given the substantial interest shown across Scotland follow up events may be organised in the future.