Distinguished Visiting Fellow Report

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This is the report for the SICSA Distinguished Visitor Fellowship of Adriana Compagnoni which took place 18^{th} to 30^{th} of May 2014. The report is divided into two parts; Section 1 describes the seminars given by the Fellow at the University of Edinburgh, Heriot-Watt University and University of Stirling, and Section 2 describes technical discussions with scientists at the Scottish institutions visited.

1 Seminars

All the seminars were advertised on the sicsa-modabs mailing list to SICSA members in the Modelling and Abstraction theme, and all were open to any member of the SICSA community.

On May 20^{th} Prof. Compagnoni gave a seminar at the Laboratory for Foundations of Computer Science (LFCS) in the School of Informatics at the University of Edinburgh entitled *A Calculus of Located Entities.* The seminar described Adriana's work on the application driven design of a new modeling and simulation language for biological processes in 3D-space.

The seminar was attended by approximately twenty people, ranging from PhD students to full professors. There was lively discussion after the seminar and several follow-on meetings with members of LFCS community were arranged. Refer to Section 2 for more details.

On May 27, Adriana was the speaker at the MACS Computer Science Seminar at Heriot-Watt University hosted by Professor Fairouz Kamareddine. The title of the seminar was *Towards a Computational Modeling Platform for Complex Systems Simulation.* In this seminar, Adriana showcased how her modeling language was successful in modeling antibacterial surfaces developed by her colleagues at Stevens and at the University Medical Center in Groningen. The seminar was attended by approximately ten people, and after a participative Q&A session three people stayed after the seminar to discuss further details and share their own research ideas with her.

Before the seminar Adriana had a lunch meeting with her host and Manuel Maarek, a new member of the department.

On May 29 Adriana gave a similar seminar at the University of Stirling tailored to an audience of Math and Computer Science professionals. She empha-

sized the evolution of her modeling work starting from the early development of pH-responsive antibacterial surface modeling in the absence of a three dimensional space. As one of the attendees wrote to Savi Maharaj: *"It was an excellent seminar today. Thanks for organising it. It is very interesting to see a successful biological application including both modelling and visualisation, and providing a framework that can be programmable."*

There were approximately twenty attendees at the seminar, which concluded with a stimulating discussion. After the seminar she had lunch with Savi Maharaj and Rachel Lintott and had the opportunity to talk about modeling signal transduction pathways for cancer research. Adriana agreed to forward further material on her group's JAK-STAT signal transduction pathway modeling work. After the talk several attendees contacted Prof. Maharaj asking for the seminar slides, which were distributed upon request. Later that day she met with Prof. Carron Shankland to compare strategies for recruitment, retention and advancement of women at Stirling and Stevens.

2 Technical Discussions

A number of stimulating interactions took place during the DVF.

David Aspinall In a meeting led by Prof. Aspinall with eight participants including PhD students, postdocs, and faculty members, Prof Compagnoni was able to highlight earlier work which could be beneficial to the research currently being undertaken in the EPSRC-funded App Guarden project.

James Cheney and Roly Perera The meeting with James Cheney and his postdoc Roly Perera focused on how the spatial attributes in the fellow's work relate to their research on provenance. Earlier work by Compagnoni on computer security could also be used to study provenance in their setting.

Vashti Galpin The discussion with Dr. Galpin outlined a clear path for collaboration where recent semantics results by Galpin could be combined with Compagnoni's work.

Stephen Gilmore Several discussions with Profs. Gilmore and Hillston focused on comparing formalisms and tools support. Both teams have collaborated with Natural Scientists. The teams discussed the challenges of relating models and experimental results and reconciling research approaches in different communities.

Jane Hillston The most fruitful collaboration of the visit was with Jane Hillston where they identified areas of common interest and potential for future research. Two main areas are probabilistic analysis of causality in signal transduction pathways networks, and simulation of agents in a surrounding world. Future plans include submission of a research proposal to the new pilot program between BBSRC and the US National Science Foundation(NSF) Directorate for Biological Sciences under the NSF/RCUK Research Cooperation Memorandum of Understanding.

Gordon Plotkin The meeting with Gordon Plotkin focused on ambitious projects for challenging problems with long term scientific repercussions.

Ian Stark The last meeting of the visit was with Prof. Ian Stark. who works in formalisms closely related to those studied by Compagnoni, opening the doors for future collaborations.

Other Activities Prof. Compagnoni participated in several weekly group meetings taking place at the LFCS.