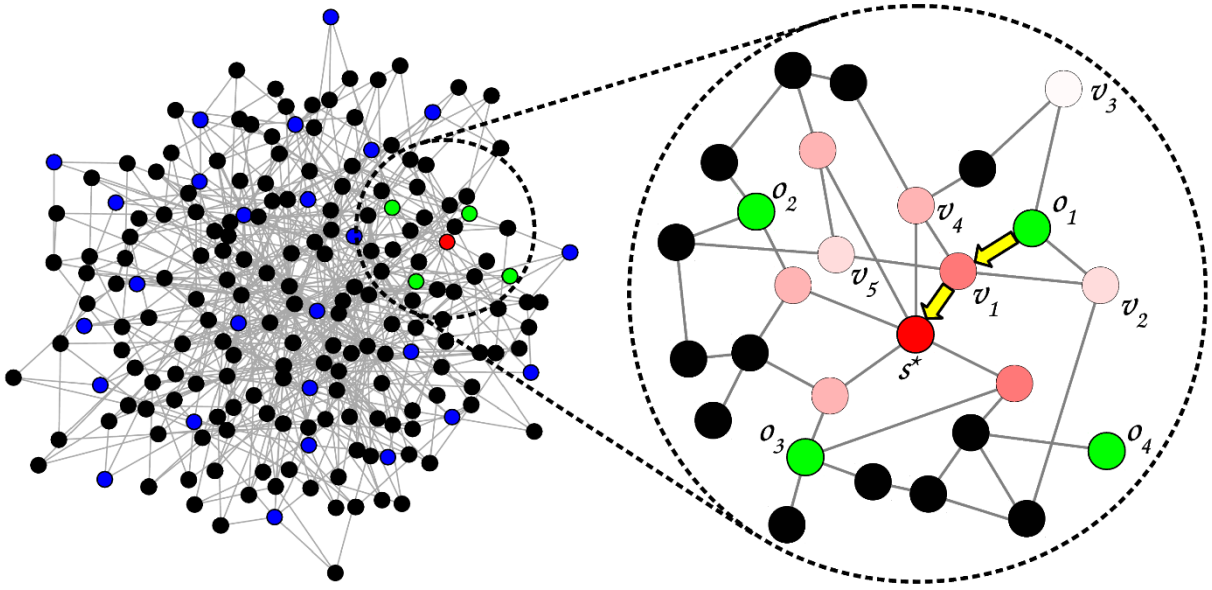
Host organization: Warsaw University of Technology
Country: Poland
Organization role: Coordinator; WP leader
Project Acronym: RENOIR
Project start and end date: 01.01.2016- 31.12.2019
Type of MSC action, H2020: RISE



Visualisation of the principle of an algorithm for fast and accurate detection of spread source in large complex networks, developed in the framework of RENOIR Project and published by Robert Paluch, Xiaoyan Lu, Krzysztof Suchecki, Bolesław K. Szymański & Janusz A. Hołyst in *Scientific Reports*, vol. 8, Article number: 2508 (2018).

Project objectives and research field:

The Project's main objective is discovery and reverse-engineering the mechanisms of information spreading in online media. RENOIR offers training and exchange of

knowledge between academia and media industry by exposing researchers to real-life problems and giving media industry access to innovative data mining tools as well as efficient search algorithms based on statistical physics.

Tell us why the topic is important and/ or how it brings to advancement in your research field:

In today's world, access to information is a decisive factor advancing industry, society and even culture. It is therefore of great importance to understand why and how some information (e.g. some memes) spreads virally with great ease, while other is met with disinterest and omission. Uncovering the reasons may allow promoting important information, like warnings about cyber-attacks, while stifle harmful rumors, such as vaccines causing autism. The aim of the project is to treat the vast complexity of such information dynamics in social systems by involving researchers in social sciences, journalism, computing, data mining and complexity science. The specific problems addressed will include understanding rules of and predicting information spreading in different media and about different topics, finding information sources and uncovering hidden information channels.

What are the benefits of participating in a MSC action?

The project makes it possible to train a number of researchers at top-rank universities such as Stanford University, Rensselaer Polytechnic Institute at Troy or National Technological University in Singapore. One of project research successes is an algorithm for fast and accurate detection of spread source in large complex network where observers with low quality information (i.e. with large spread encounter times) are ignored and potential sources are selected based on the likelihood gradient from high quality observers. Our algorithm is much faster and provides higher quality of localisation results than other existing methods and can apply for an efficient search of information sources in large social networks. Collaboration with a commercial partner made possible development of specific software tools for monitoring and tracking of media messages that are already in use by Slovenian Press Agency and Polish Press Agency, a further commercialisation process is in progress.

Did you encounter any challenges during application/ implementation and did you get any help?

Until now there were three main challenges related to the project. The 1st was the very high level of costs for living at some partners e.g. at Stanford or in Singapore. We were able to successfully overcome this obstacle due to an additional funding received from the Polish Ministry of Science that complemented the budget received from H2020. It was possible because NCP saw this group of problems well in advance and arranged appropriate programme accepted and financed by Ministry of Science. The second issue was lack of space in some of the labs that were selected as project partners in the original proposal. Some professors that initially accepted to host

project participants took their sabbaticals and at the beginning the Consortium was not able to send as many people for training as it was originally planned. To overcome this obstacle we extended the consortium by additional partners that could work on project aims. The last issue is related to internal rules at some of beneficiary institutes that did not include possibility of longer secondments to be supported by budget of the RISE programme. It took a few months to introduce necessary changes and to run the project in a smooth way.

Would you recommend others to apply? What useful advice/ tips can you give them?

The RISE project is extremely useful both for accelerating research activity and for staff training. My advice for potential applicants is to select challenging research aims and partners from top universities. In such a way the training will mean a large step forward in the career development of all secondees. One should think also in advance about the level of potential expenses when researchers are traveling to US or Asia and one should look for additional sources that could complement costs of travel and living in, i.e. in such expensive places as the Silicon Valley or Singapore.