ERCIM "ALAIN BENSOUSSAN" FELLOWSHIP PROGRAMME

ERCIM
European Research Consortium
for Informatics and Mathematics

Scientific Report

First name / Family name	Gleb/Polevoy
Nationality	The Netherlands
Name of the *Host Organisation*	University of Warsaw
First Name / family name of the *Scientific Coordinator*	Tomasz/Michalak
Period of the fellowship	01/06/2019 to 30/04/2020 (I started a position of W1 professor at the University of Paderborn, so I had had to resign before the year ended)

I – SCIENTIFIC ACTIVITY DURING YOUR FELLOWSHIP

We worked on a paper on connecting in a social network while hiding from social network analysis tools. In our model, several agents want to connect themselves to others, while keeping a low profile. This can model terrorists hiding from the police or dissidents under an authoritarian regime. This work follows a research line on strategic social network analysis.

We started working on a paper about quick computation of Shapley value. There have been several important papers about rule-based definitions of cooperative games, allowing for a quick computation of the Shapley value. We continue in that avenue, considering approximations as well.

We are also working on a paper about exchangeability of Nash equilibria. Two-person constant-sum games are known to possess exchangeable equilibria, and we're studying which other games possess this important property.

We started working on a paper about a better modelling of epidemics. This model introduced individual parameters related to spreading the virus, such as susceptibility and gullibility, and parameters expressing economic production, such as yield and work remoteness. Such parameters allow for a realistic modelling of counter virus measures, such as closing factories, and the repercussions of such measures.

II – PUBLICATION(S) DURING YOUR FELLOWSHIP

The paper "Hiders Game" with Tomasz Michalak had been submitted to the ACM EC conference and rejected. Now we are working on the new version.

III – ATTENDED SEMINARS, WORKSHOPS, CONFERENCES

I have attended the following events:
- the Forum of theoretical informatics, combined with the 100th anniversary of the Polish mathematical society. (03/09/2019 - 07/09/2019)
- Group- and faculty-wide seminars.
- Attended several courses for PhD students, partially. For example, lectures on Combinatorics and algorithms for sparse graphs (20/01/2020 - 24/01/2020) by Michał Pilipczuk.

IV – RESEARCH EXCHANGE PROGRAMME (REP)

Unfortunately, it has not been realised. We pushed the date further, and then the epidemics prevented travelling.