Digital and computational approaches to study migration

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1 Motivation

The unexpected surge in refugee flows into Turkey and Europe since 2015 has created a humanitarian crisis and highlighted the need for timely data and new analytical tools to better understand migration dynamics and the underlying decision processes. Recent advances in computational social science (CSS) have shown that digital trace data, such as tweets [Zagheni et al., 2014, Fiorio et al., 2017], email logs [Zagheni and Weber, 2012], call records [Yang et al., 2018], and advertising data [Dubois et al., 2018] can be used to estimate stocks of migrants and their assimilation. Such data can also be incorporated in increasingly detailed models of migration flows that make it possible to better understand the dynamics and complexity of migration decisions [Bansak et al., 2018].

In this proposal, we seek to offer participants of the BIGSSS Summer Schools in Computational Social Science the opportunity to build on our experience in the use of digital trace data and simulation techniques to improve the understanding of human migration. Our interdisciplinary team brings together expertise related to the theoretical aspects of studying migration, as well as technical knowledge on studying migration with new data and tools. This knowledge can be beneficial for multiple actors: (i) demographers and social scientists seeking to become versed in new computational techniques to study migration, (ii) computer science students looking to explore the ripe area of computational social science, and (iii) policy/governmental organizations that would like to gain new insights and perspectives on their field of activity.

The mix of experience our team offers could be useful in defining interdisciplinary projects that aim to address problems that have traditionally been in the focus of social scientists, but using novel data resources and analytical approaches. Examples of such potential projects could include: (i) scaling up surveys to a much larger audience by running them through Facebook [Ipeirotis and Gabrilovich, 2014]; (ii) understanding the needs and aspirations of migrants by performing text analysis of their tweets; (iii) using advertisement data to study integration or segregation; or (iv) performing in silico experiments that integrate large scale social media data with agent-based models of migration processes.

2 Team

Our team has in-depth experience in using CSS techniques for studying migration. See [Fiorio et al., 2017, Zagheni and Weber, 2012, State et al., 2013, Zagheni et al., 2014, Dubois et al., 2018] for a selection of recent relevant papers.

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The team consists of four researchers with complementary skills and level of experience. Should funding be available only for two scholars, then two of us (Grow and Zagheni) would use our institutional funds to cover travel costs and accommodations in Cagliari.

3 Lectures

Our team members could give lectures on the following topics:

- **Lecture 1**: Ingmar Weber.

  Title: Digital trace data for migration research

  Abstract: This lecture will discuss the use of online data for studying migration, focusing on the big picture.

- **Lecture 2**: Emilio Zagheni.

  Title: Combining traditional and novel data sources for migration research

  Abstract: This lecture will discuss how traditional surveys, social media and online tools can be combined to study migration processes.

- **Lecture 3**: Kiran Garimella.

  Title: An exploration of data collection tools for migration research.

  Abstract: The lecture will provide a hands on tutorial about tools to collect online data which can be used to study migration. This would include data sources such as Twitter, Facebook advertising platform and WhatsApp.

- **Lecture 4**: André Grow.

  Title: An introduction to agent-based modelling in migration research

  Abstract: This lecture will convey the basics of agent-based modelling and illustrate some of the key concepts of the method with examples from migration research.

4 Innovative format for the post-incubator phase

Should our proposal be accepted, the Max Planck Institute for Demographic Research (MPIDR) - through team member Emilio Zagheni - would commit to offer the 3 PhD students in our team the opportunity to spend 2-3 months at MPIDR for a paid internship, right after the Summer School. At MPIDR, the students would have the opportunity to develop and complete the research project that they started in Cagliari and to receive feedback from demographers along the way.

References

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