

Data Science for Social Good

From Facebook to job evaluations, mathematics now plays an important part in every aspect of our social lives. And, increasingly, mathematicians are actively using their skills to improve society. Examples include finding the genealogy of far-right extremism; quantifying gerrymandering (the adjustment of electoral districts to benefit certain political powers); understanding voting patterns; setting socio-economic development targets and analysing how Facebook classifies people.

Behind these projects are some advanced mathematical and statistical tools, including singular value decomposition, representations of words as vectors, neural networks and methods for Artificial Intelligence.

There is also an increased movement to use mathematics in public communication, both through statistics and articles explaining (in simple terms) how data science methods work.

There are however dangers and challenges. Google Flu turned out to be a spectacular example of confusing correlation for causation. Some algorithms can make biased decisions against minorities, despite the best intentions of the creators.

This programme will bring mathematicians, statisticians and journalists interested in using models and statistics to help improve the world. It will not shy away from controversial questions.

Local people involved

This programme will be run by David Sumpter. It relates to research that is growing in our faculty. For example, Raaz Sainudiin (maths) is working on far-right genealogical trees and Attila Szilva (physics) is running a project on the voter model.

This activity will also help spread ideas and approaches around data science, consistent with the faculty's goal of improving our competencies in this area.

Activity

One guest per month as part of CoSy lunch series. (4 speakers)

Follow-up on course 'Mathematical modelling of social behaviour' by David Sumpter. This weekly meeting will continue on Wednesdays during January to March, with further presentations by students on the course.

Computing workshop for the humanities, organised by Raaz with CEMFOR and computational sociologists. (4 speakers)

Workshop in June: 'Data Science for Social Good and against Social Evil'. Group of about Invite 8 world-leading researcher to present their work, shorter presentations by contributed talks. (8 speakers)

Example of people we would like to invite. There is an emphasis on diversity in application area, so as to get as wider discussion as possible.

Cathy O'Neil, studys dangers of algorithms, (<https://mathbabe.org>)

Tolga Bolukbasi, Boston Univeristy, models of language and discrimination, (<http://people.bu.edu/tolgab/>)

Mona Chalabi, The Guardian, data visualisation, (<http://monachalabi.com>)

Milena Tsetkova, online bots, <http://tsetkova.me>

Moon Duchin, mathematics of jerrymandering (<https://sites.tufts.edu/gerrymandr/>)

David Garcia, computational social science, <http://dgarcia.eu>

Nicky Case, visualising and explaining models, (<http://ncase.me>)

Viktoria Spaiser, modelling social change, <http://dgarcia.eu>

Before creating a final list, we will talk to students on CIM course and other people who are interested in the growing 'data science' group in Uppsala.

Budget

Wordwide speakers	Travel & Accommodation	15000kr
* 6 = 90000kr		
European speakers	Travel & Accommodation	7000kr *
10 = 70000kr		
Lunch,coffee & dinner workshop		500kr * 50
= 25000kr		

We would like Joel or CIM administrator to help with workshop organisation. Otherwise, some of the funding will be used for another administrator in place of two guests.