

# Starting Points to find a paper for the final project - 2020

Of the topics covered: cellular automata, self-propelled networks and genetic algorithms. A good starting point is to pick a topic from the lectures + an application (e.g. traffic modelling, cell growth etc) and search those keywords in google scholar. Another starting point is to take references from the lecture of bits you found interesting, look up the reference in google scholar, and look at recent-ish papers who have referenced it. Contact me for any missing references!

Zoom slots - for labs Mon 25th, Tue 26th May.

Sign up here: (at least one person from the group should be there)

[https://docs.google.com/spreadsheets/d/1-6CaaqhxlMhOZ5okGecMjeKctCq1jGKG9Z\\_2C9jMf8Y/edit?usp=sharing](https://docs.google.com/spreadsheets/d/1-6CaaqhxlMhOZ5okGecMjeKctCq1jGKG9Z_2C9jMf8Y/edit?usp=sharing)

Group forming -

by 1.40pm if you would like help to form a group send me (by email

[fiona.skerman@math.uu.se](mailto:fiona.skerman@math.uu.se) or privately in zoom chat):

Your name, topic 1, topic 2 from list below, preferred group size, anyone else you have already planned to work with.

1.50pm for those who messaged me, I'll send groups.

Remember to be pragmatic and choose projects which are simple to model or which give you access to the code they used. Email me if you are unsure if the paper is suitable - there will also be dedicated time to discuss this in 25th 26th lab times.

**You do not need to choose from this list.** It is here to give you a taste of what is out there.

Cellular automata

- Traffic flow - (e.g. [Two lane traffic simulations using cellular automata](#) [M Rickert](#), [K Nagel](#), M Schreckenberg... - Physica A: Statistical ..., 1996 - Elsevier)
- Traffic flow [Simulation of bi-direction pedestrian movement using a cellular automata model](#) [F Weifeng](#), Y Lizhong, F Weicheng - Physica A: Statistical Mechanics and ..., 2003 - Elsevier
- Tumor growth ([HTML] [A cellular automata model of tumor-immune system interactions](#) [DG Mallet](#), [LG De Pillis](#) - Journal of theoretical biology, 2006 - Elsevier

Self-propelled particles

- Vicsek model predator prey - [Collective behavior and predation success in a predator-prey model inspired by hunting bat](#) [Y Lin](#), [N Abaid](#) - Physical Review E, 2013 - APS

- Fish [Inferring the structure and dynamics of interactions in schooling fish](#) Y Katz, [K Tunström](#), [CC Ioannou](#)... - Proceedings of the ..., 2011 - National Acad Sciences

#### Networks

- network epidemic spread robustness [Identification of patient zero in static and temporal networks: Robustness and limitations](#), [N Antulov-Fantulin](#), A Lančić, [I Šmuc](#), [H Štefančić](#)... - Physical review ..., 2015 - APS
- network epidemic robustness - [Robustness and assortativity for diffusion-like processes in scale-free networks](#) [G D'Agostino](#), [A Scala](#), [V Zlatić](#)... - EPL (Europhysics ..., 2012 - iopscience.iop.org

#### Genetic Algorithms

- insight into biological evolution - [New insights into bacterial adaptation through in vivo and in silico experimental evolution](#), T Hindré, [C Knibbe](#), [G Beslon](#)... - Nature Reviews ..., 2012 - nature.com
- investing ways to evolve synthetic GA - [Use of statistical outlier detection method in adaptive evolutionary algorithms](#), [JM Whitacre](#), TQ Pham, [RA Sarker](#) - ... of the 8th annual conference on ..., 2006 - dl.acm.org
- GA models [Mutation size optimizes speciation in an evolutionary model](#) ND Dees, S Bahar - PloS one, 2010 -.ncbi.nlm.nih.gov