Minireferáty I

2025

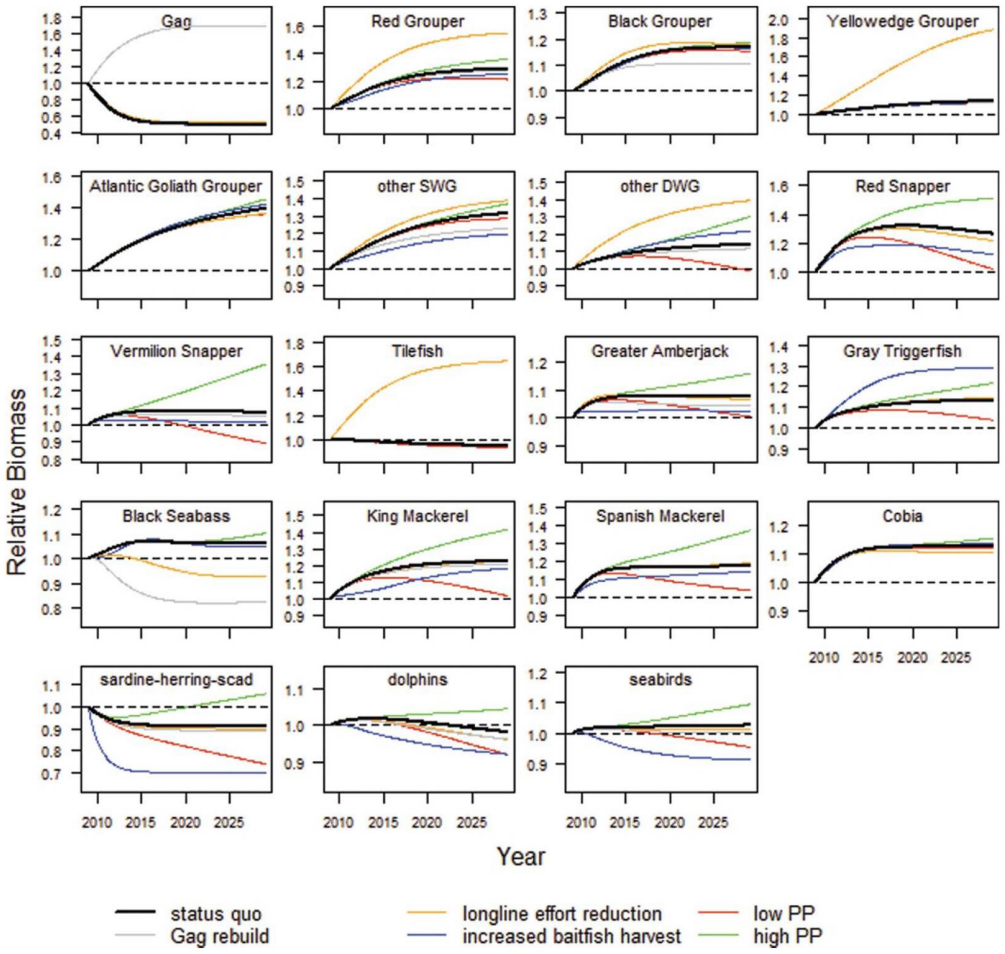
- biologie
  Banďouchová, Káčerová, Konečná, Kišš, Hutňan
- doprava, davy
  Bílek, Holčík, Horváth, Kohout, Drábik
- lidé
  Hubatka, Kolek, Halmeš, Kozáková
- ostatní
  Bezák, Boháš, Budík

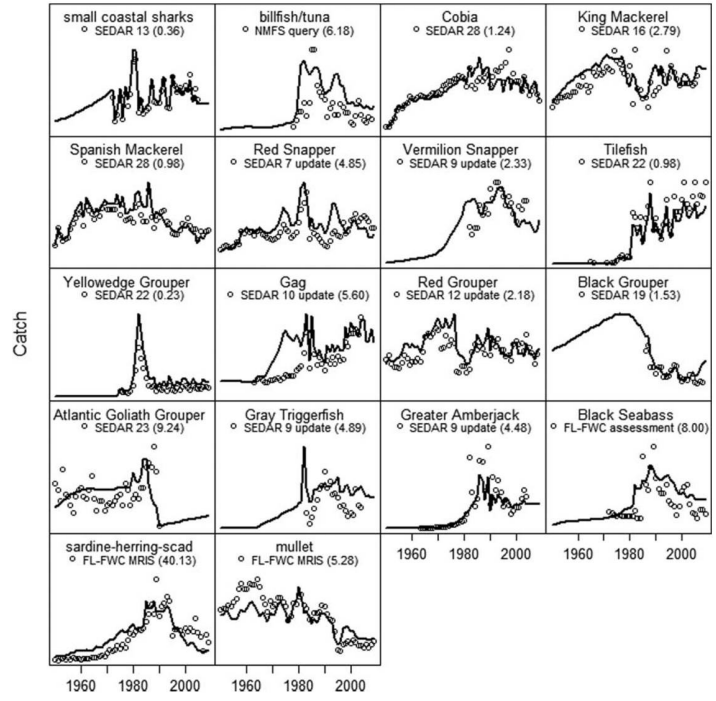
JOURNAL ARTICLE

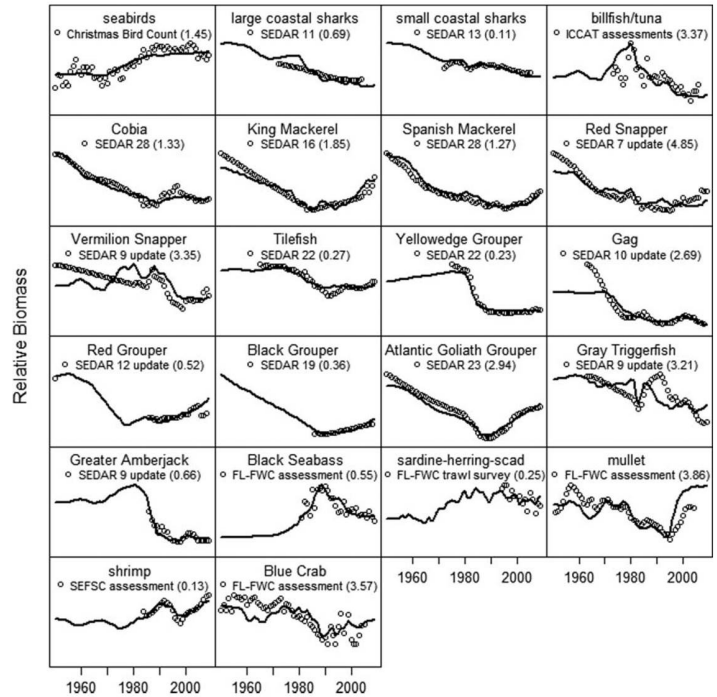
Simulating the Trophic Impacts of Fishery Policy Options on the West Florida Shelf Using Ecopath with Ecosim

David D. Chagaris ✉, Behzad Mahmoudi, Carl J. Walters, Micheal S. Allen

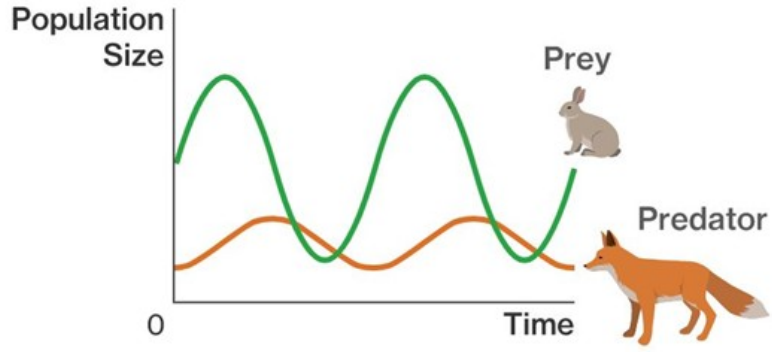
Marine and Coastal Fisheries, Volume 7, Issue 1, January 2015, Pages 44–58,
https://doi.org/10.1080/19425120.2014.966216

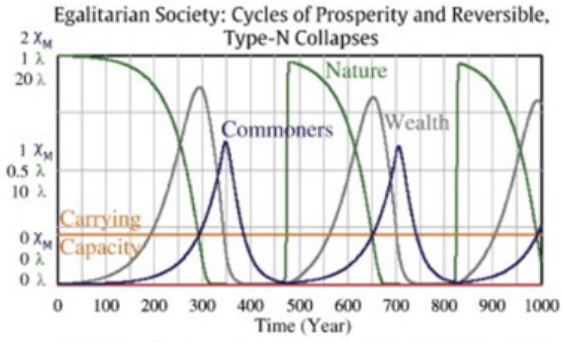




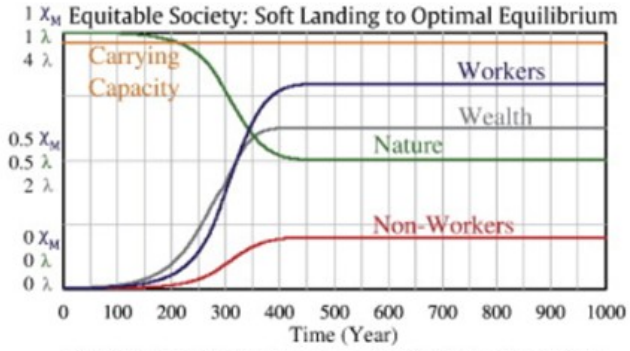


Modelovanie kolapsu civilizácií (HANDY I model)

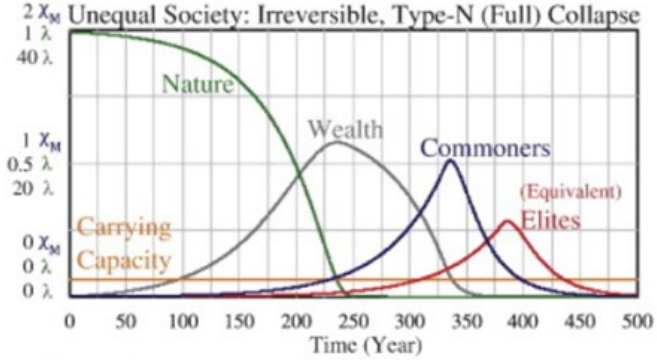




c) Cycles of prosperity, overshoot, (reversible Type-N) collapse, and revival when Elite population (marked in red) equals zero.

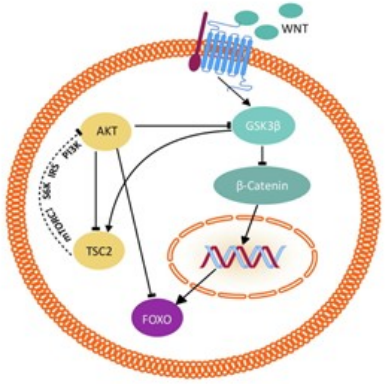


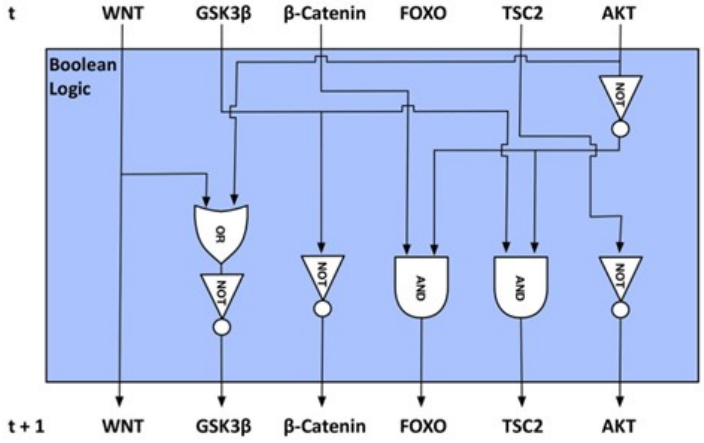
a) Equilibrium in the presence of both Workers and Non-Workers can be attained with slow growth and equitable salaries.

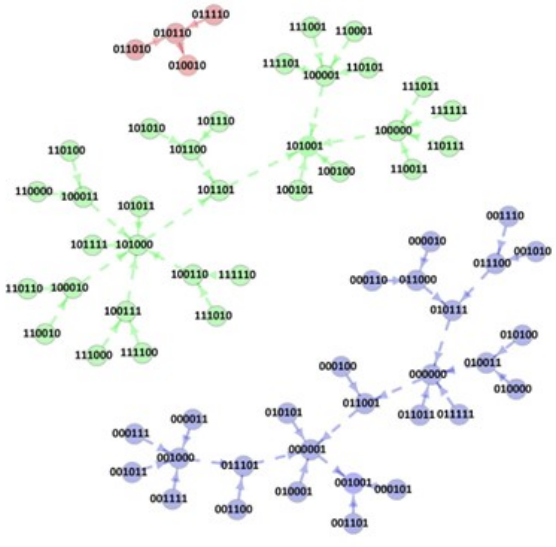


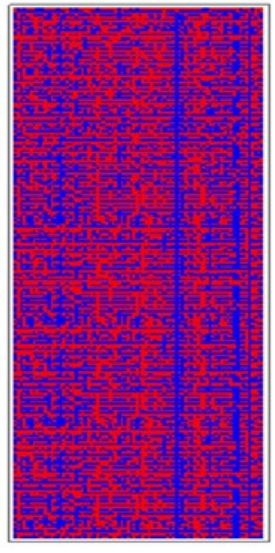
b) A fast full collapse due to both over-depletion and inequality ($\kappa = 100$).

BOOLEAN NETWORK MODELLING





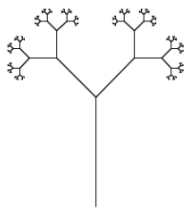




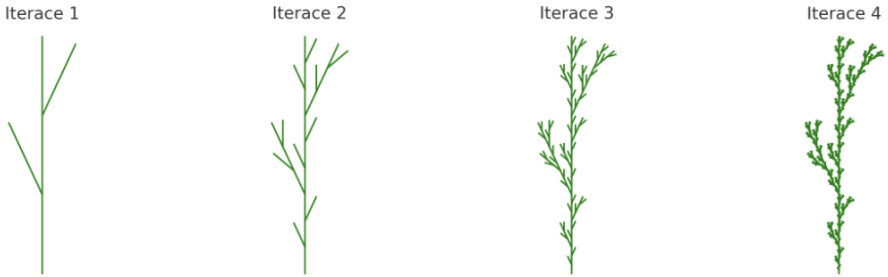
https://doi.org/10.1016/j.csbj.2020.03.001

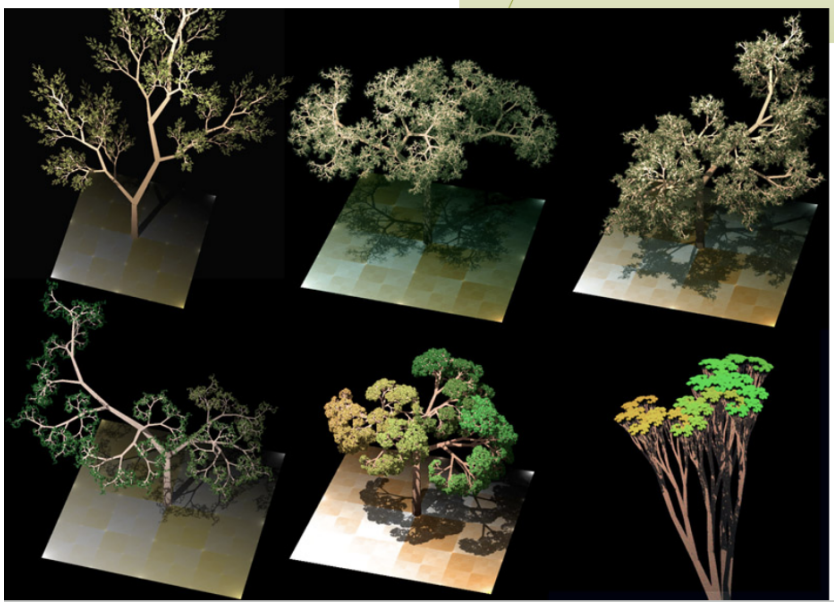
https://www.nature.com/articles/s41598-022-20979-x/figures/10

L-system



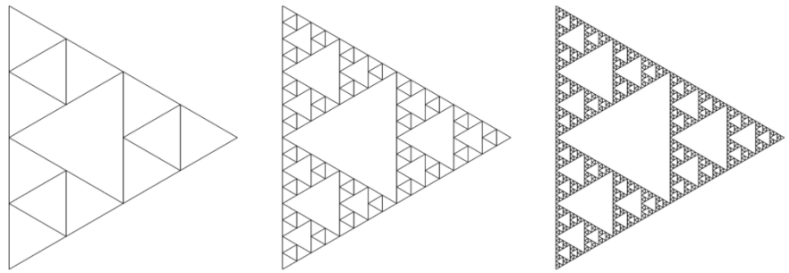
$$F \rightarrow F[+F]F[-F]F$$





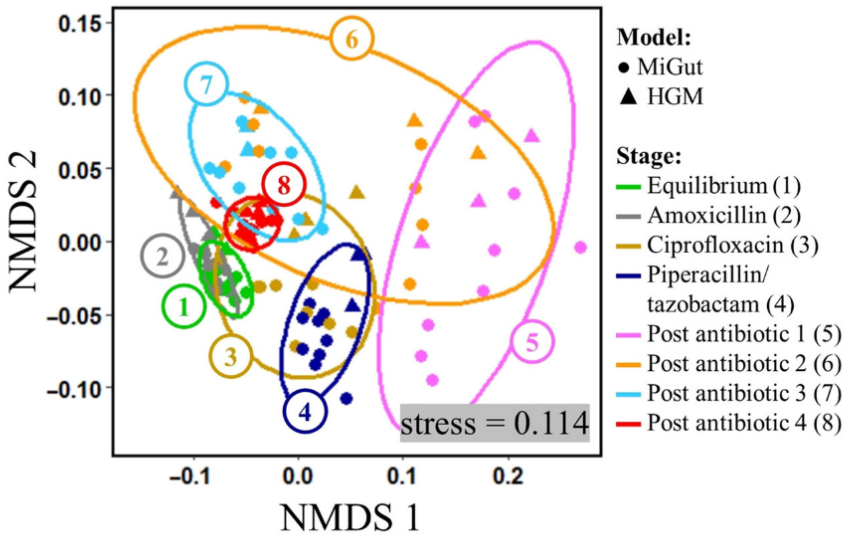
start : F–G–G

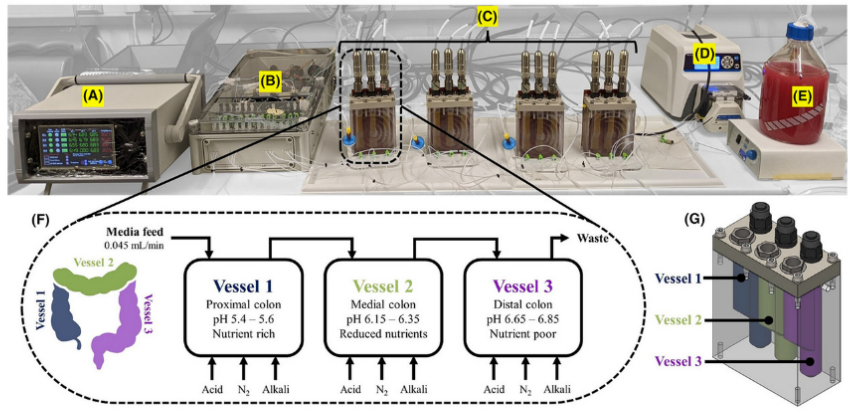
rules : (F → F–G+F+G–F), (G → GG)

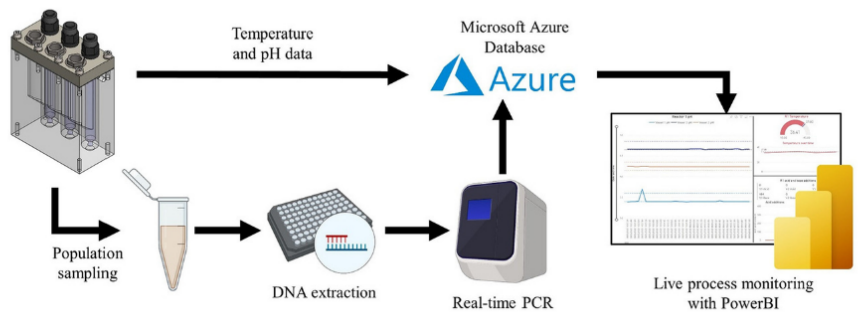


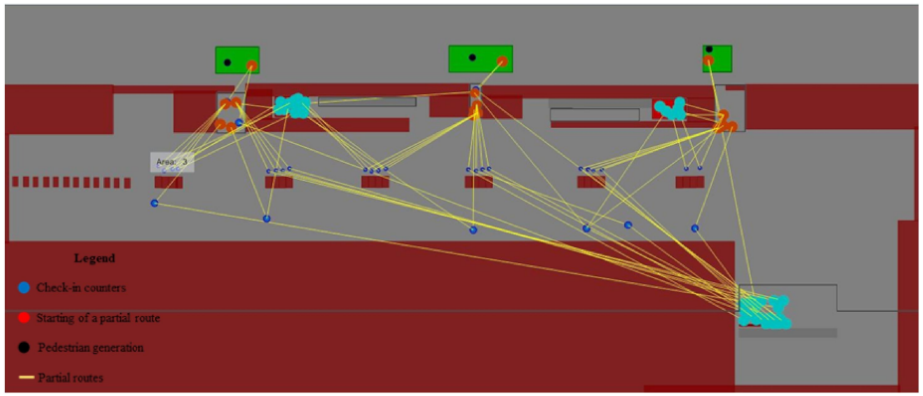
MiGut: Scalable Simulation of the Human Gut

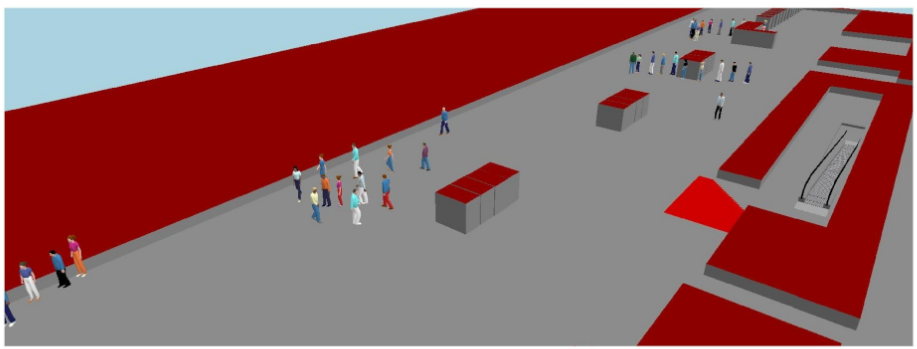
Source: https://doi.org/10.1111/1751-7915.14259



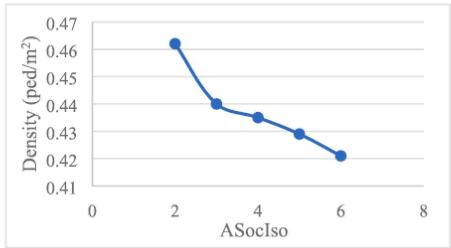


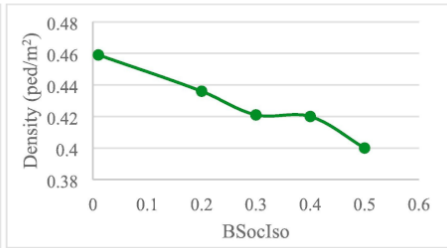


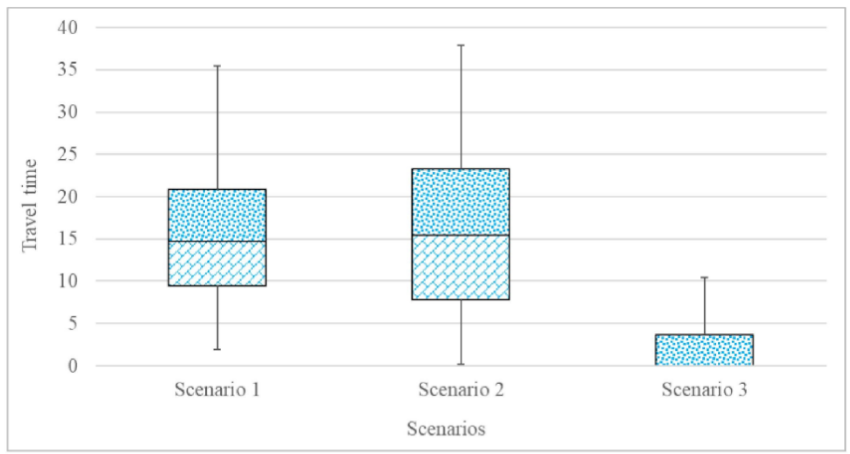




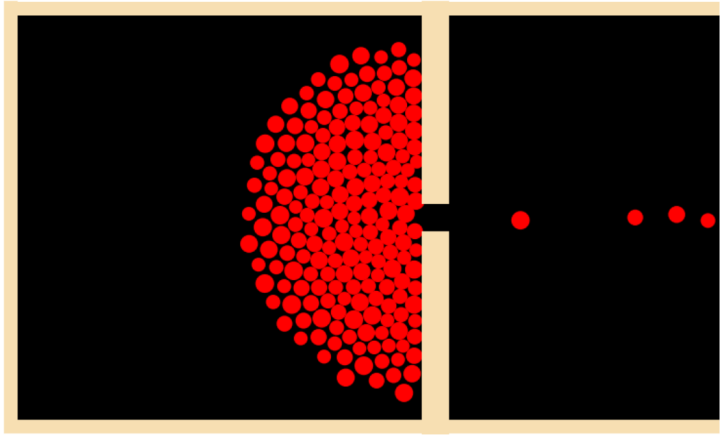
https://www.sciencedirect.com/science/article/pii/S2590198221002323#f0015

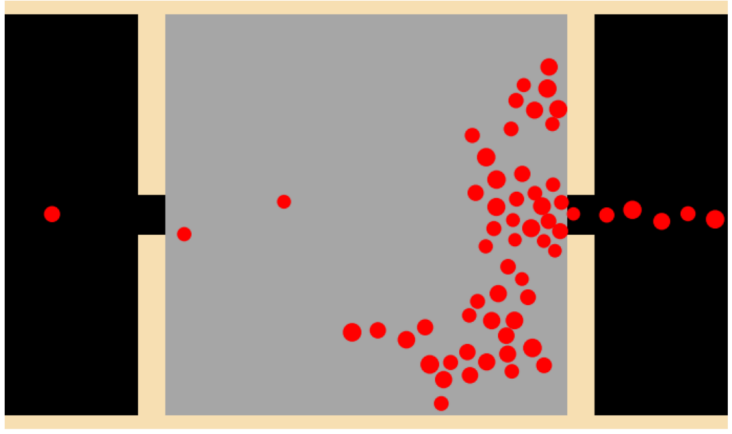


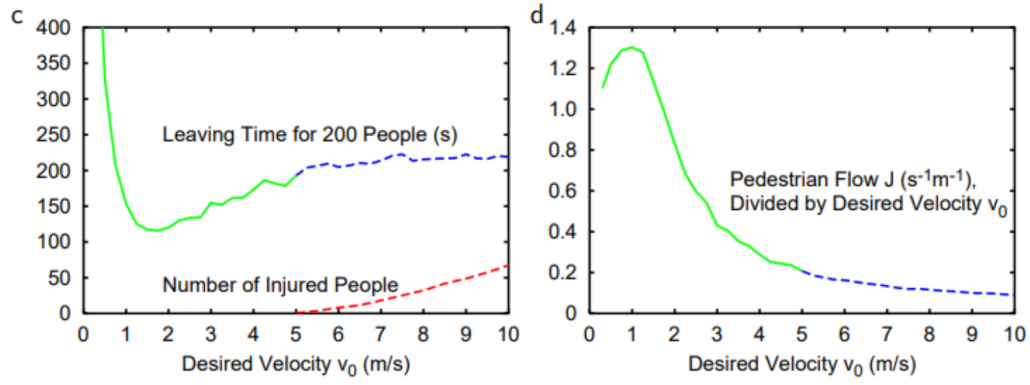


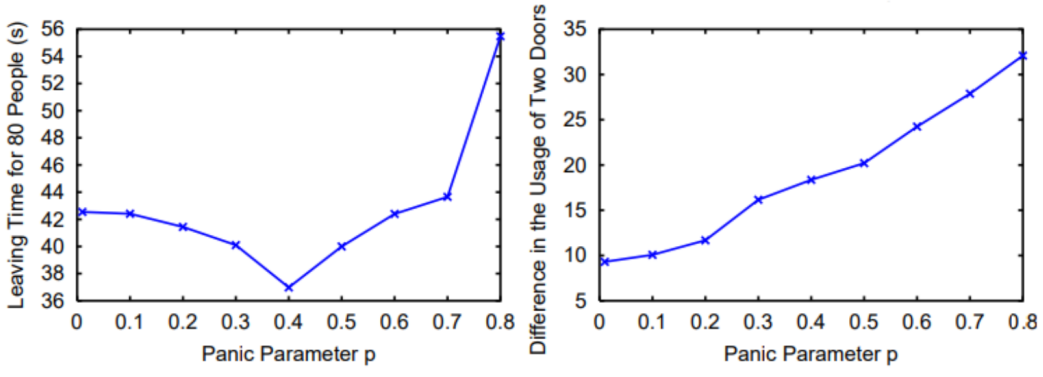


Modelování evakuace davů



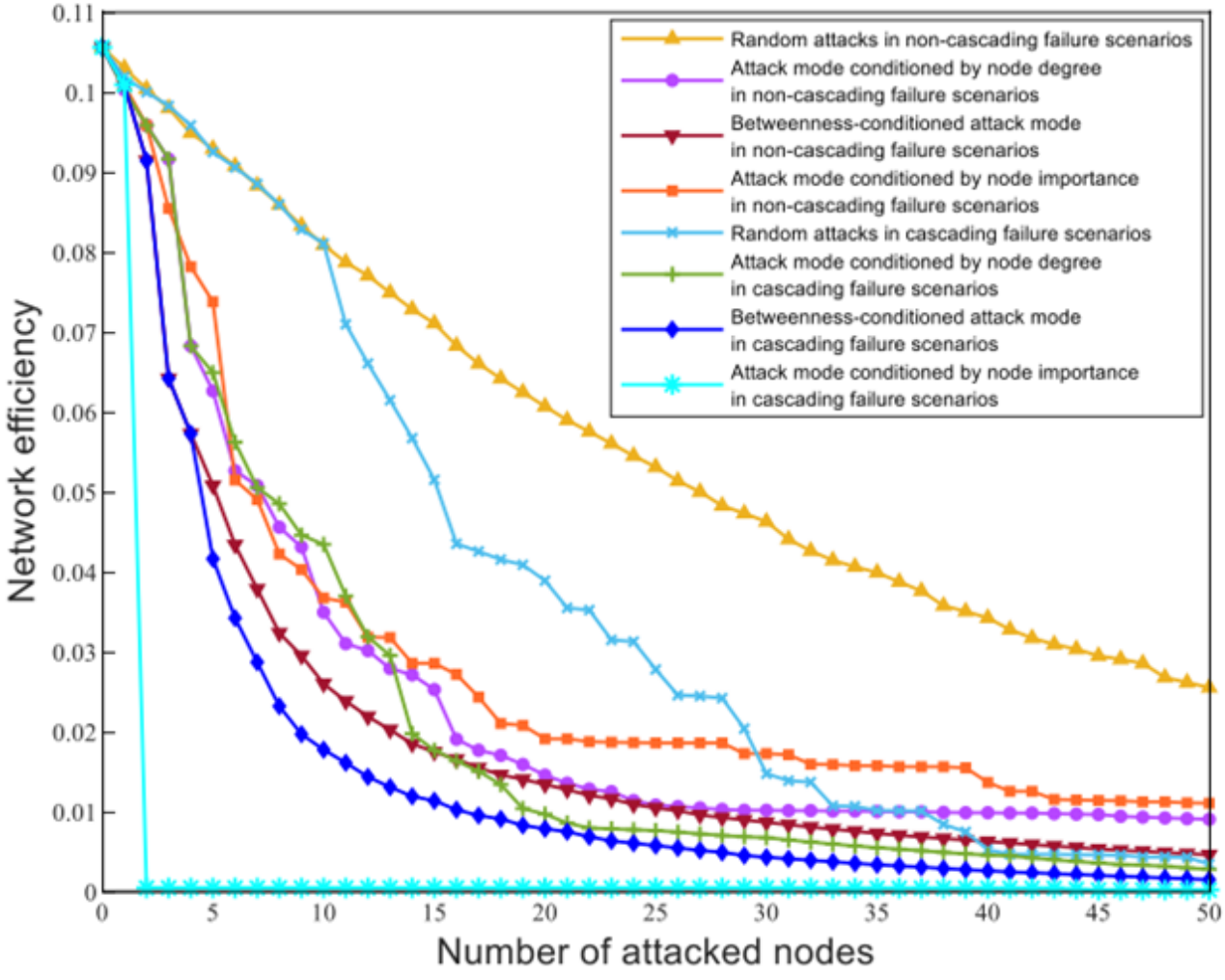






https://www.researchgate.net/publication/12295370_Simulating_Dynamic_Features_of_Escape_Panic

Simulation study on Topology characteristics cascading failure of Hefei subway station



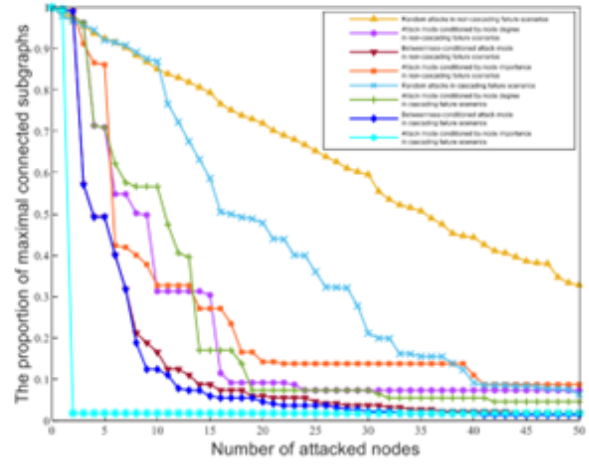
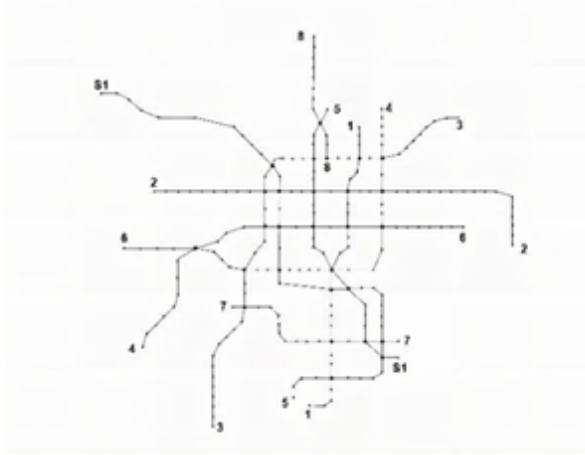
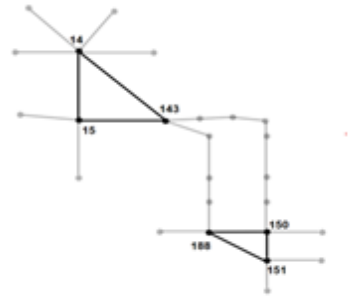


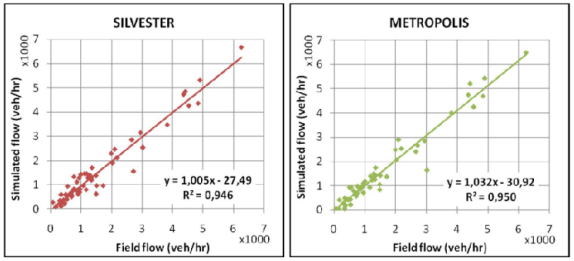
Figure 12. Proportional variation trend of maximal connected subgraphs.



Indicator	Value	Indicator	Value
Number of Nodes	217	Network Diameter	43
Number of network edges	237	Clustering coefficient	0.0025
Average Degree	2.1843	Maximum number of edges	645
Network Efficiency	0.1056	Connectedness	0.3674
Average Betweenness	0.0306	Average shortest path length	14.1436



Yin, X.; Wu, J. Simulation Study on Topology Characteristics and Cascading Failure of Hefei Subway Network. *Sustainability* **2023**, *15*, 422. https://doi.org/10.3390/su15010422



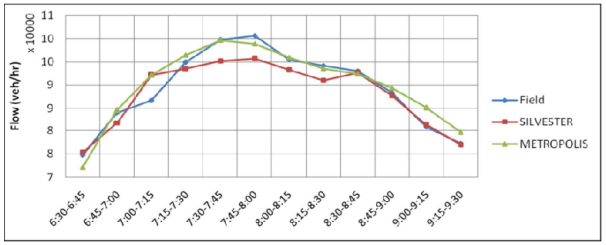
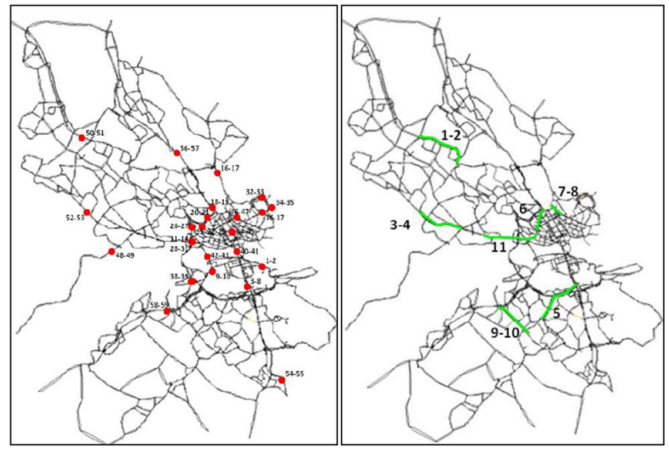
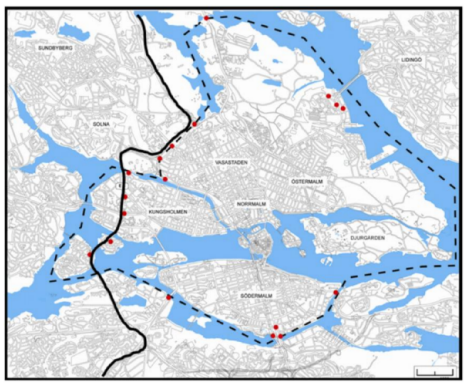


Table 5: Aggregate result for SILVESTER and METROPOLIS

	SILVESTER	METROPOLIS
Flow over the cordon (veh/hr)	35 611	35 651
Mean travel time (min)	19	20.8
Congestion (%)	41.1	41.3
Speed (km/hr)	39.3	34.9
Number of car trips starting between 6:30-9:30	280 801	335 337
Mileage (10^6veh-km)	3.49	4.08



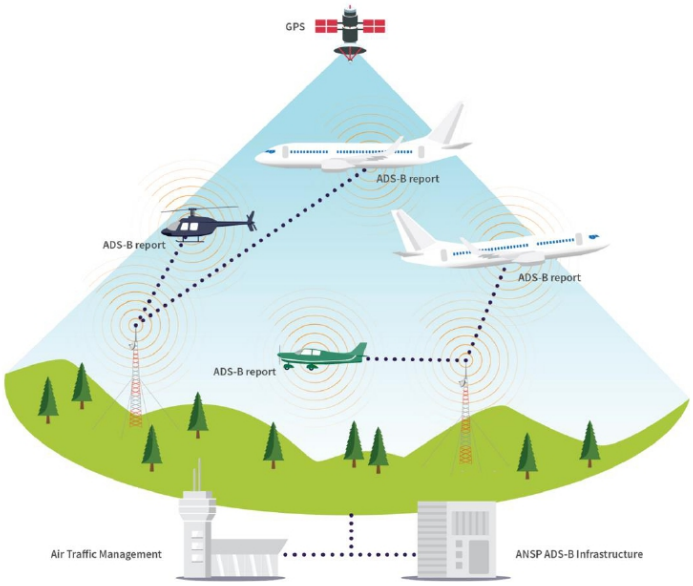


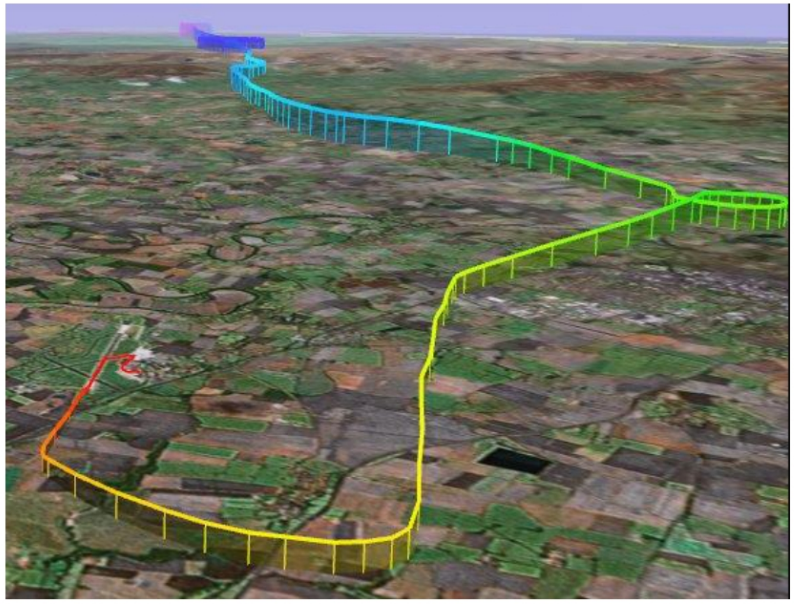
Time	Congestion charge (SEK)
06:30–06:59	10
07:00–07:29	15
07:30–08:29	20
08:30–08:59	15
09:00–15:29	10
15:30–15:59	15
16:00–17:29	20
17:30–17:59	15
18:00–18:29	10
18:30–06:29	0

Figure 5: The charging points (red dots) and the charging schedule (table to the right).

Table 6: Change in aggregate results due to charging

	SILVESTER	METROPOLIS
Number of car	-5.0%	-2.6%
Flow over the cordon	-25.3%	-12.4%
Average travel time OD-par	-6.8%	-7.6%
Congestion	-20.7%	-22.9%
Speed	7.1%	7.6%
Mileage	-5.16%	-1.11%
Consumer surplus, MSEK	0.53	-0.61
Revenues, MSEK	0.91	1.27
Net benefit, MSEK	1.44	0.66





Wrong Surface Operations

occur when pilots mistakenly attempt takeoff or landing on a taxiway instead of a runway.

Orlando, Florida March 20, 2025
B737 mistakenly tried to takeoff on a taxiway instead of the runway

Runway Excursions

occur when an aircraft veers off or lands off the end of a runway.

Lexington, Kentucky 2006
CRJ overshot the runway on takeoff and killed 49 of 50 occupants on board

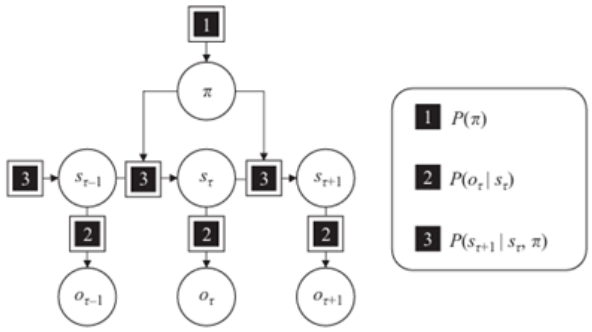
Runway Incursions

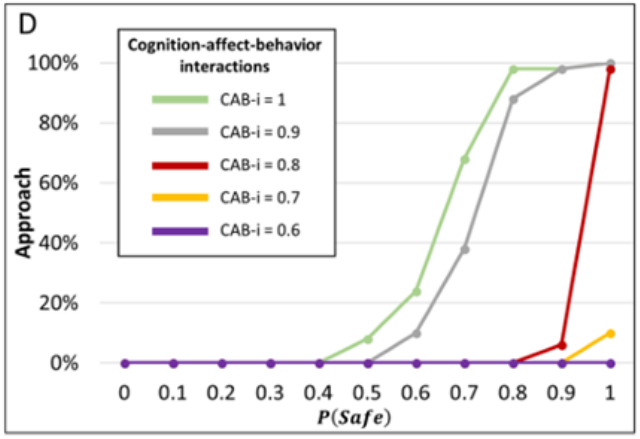
occur when an aircraft collides with another aircraft or ground vehicle.

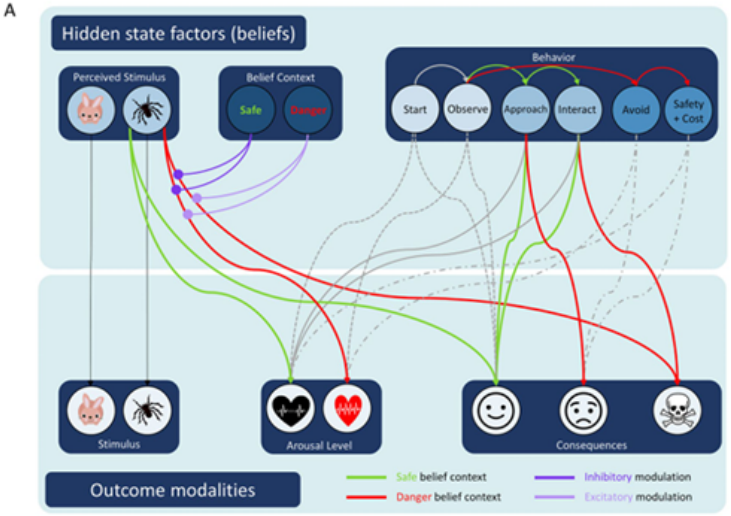
Chicago, Illinois Feb 25, 2025
B737 on final approach executes a last moment go-around as intruder business jet taxied across landing runway.

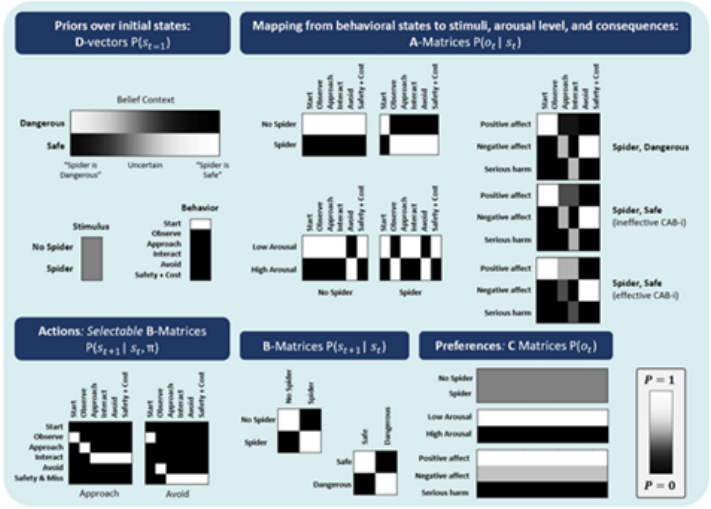
https://aerospace.honeywell.com/us/en/safety/surf-a-surface-alerts-improve-runway-safety

Active inference (POMDP)





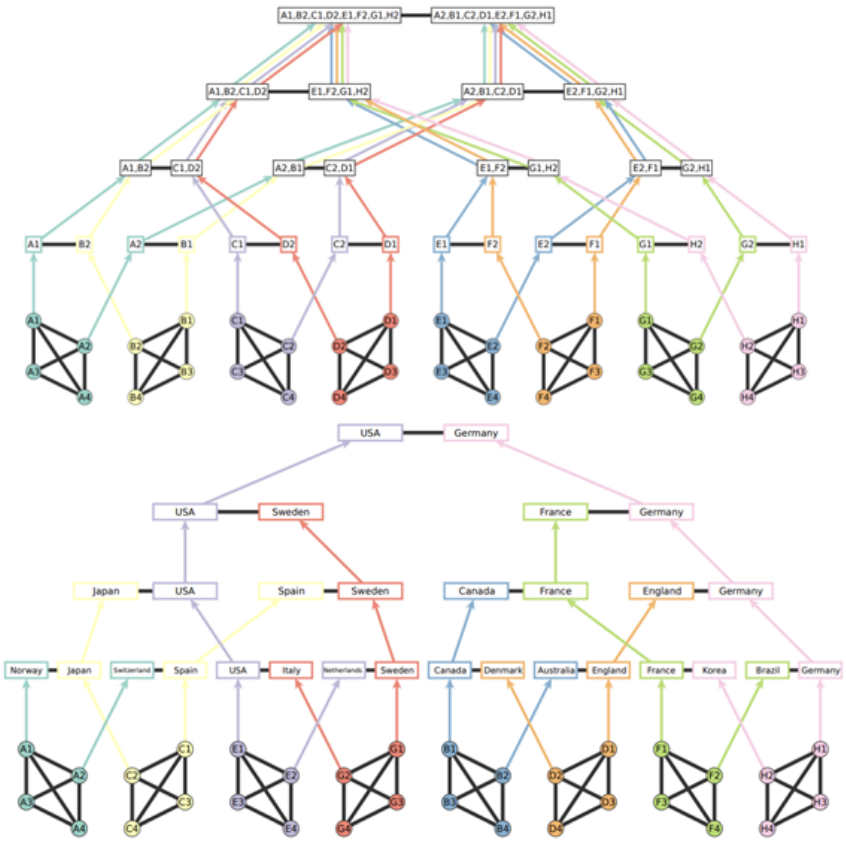


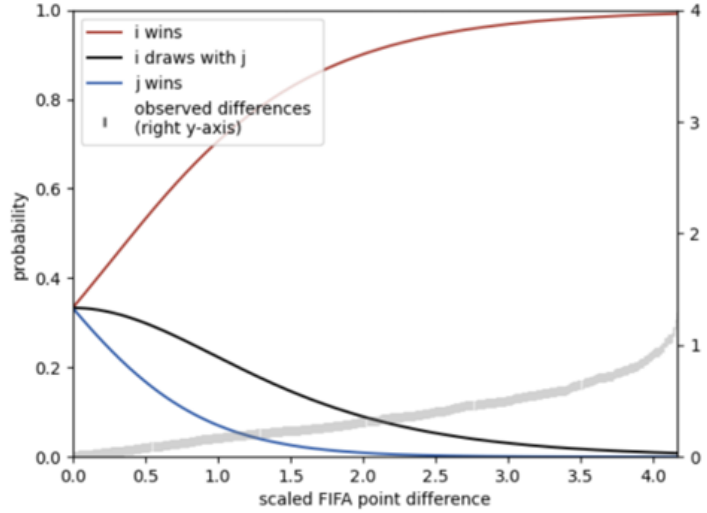


Smith, R., Moutoussis, M., & Bilek, E. (2021). Simulating the computational mechanisms of cognitive and behavioral psychotherapeutic interventions: Insights from active inference. Scientific Reports, 11(1), Article 10128. https://doi.org/10.1038/s41598-021-89047-0

Parr, T., Pezzulo, G., & Friston, K. J. (2022). Active inference: The free energy principle in mind, brain, and behavior. The MIT Press. https://doi.org/10.7551/mitpress/12441.001.0001

Efficient Computation of Tournament Winning Probabilities

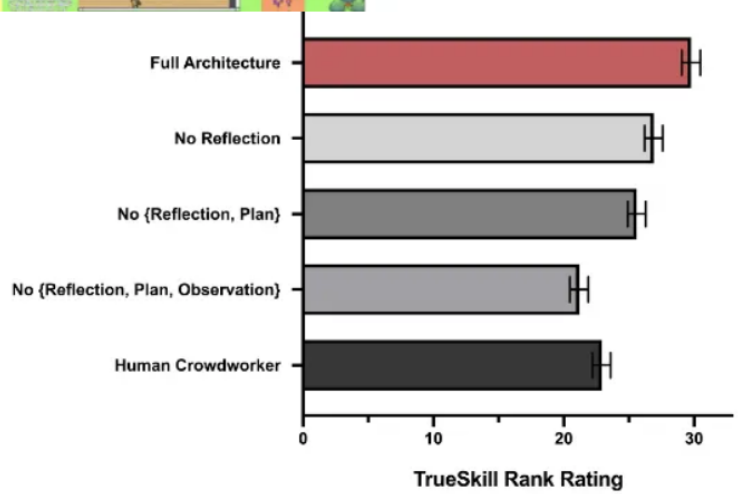




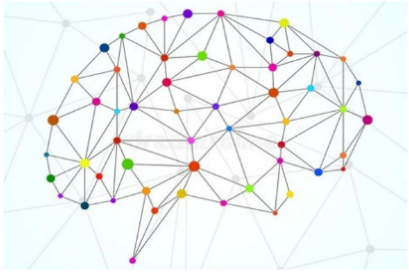
	winner	final	semi	quarter	last 16
Brazil	18.0102	27.9885	42.4416	64.0990	88.2036
Belgium	14.6296	24.0354	37.6657	58.6418	85.7881
Argentina	10.4628	18.4870	33.1079	51.7868	83.1781
France	9.2438	16.9658	30.8205	49.1837	81.0684
England	6.7820	13.2562	25.5575	46.9966	72.9954
Spain	5.4471	10.9720	20.4599	39.4871	73.2707
Netherlands	5.2185	10.9158	22.7757	44.9125	80.2349
Portugal	3.9635	8.7710	17.6283	36.4244	74.1486
Denmark	3.4731	7.9017	17.4011	32.6412	65.0819
Mexico	2.6924	6.4737	14.9415	29.2414	60.9167

Ulrik Brandes, Gordana Marmulla, Ivana Smokovic
https://doi.org/10.48550/arXiv.2307.10411

Generative Agents: Interactive Simulacra of Human Behavior
https://arxiv.org/abs/2304.03442

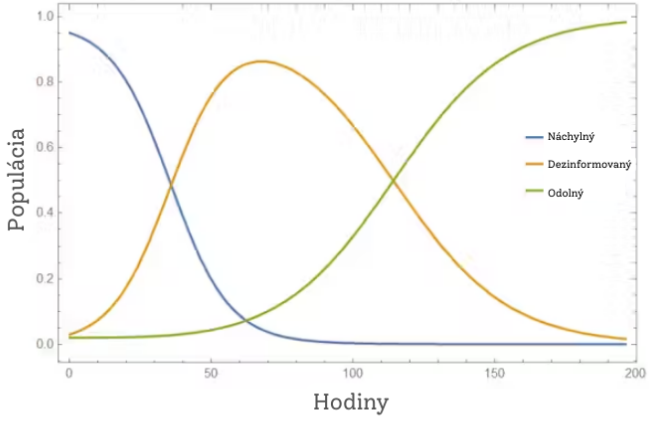


Šírenie dezinformácií na sociálnych sieťach

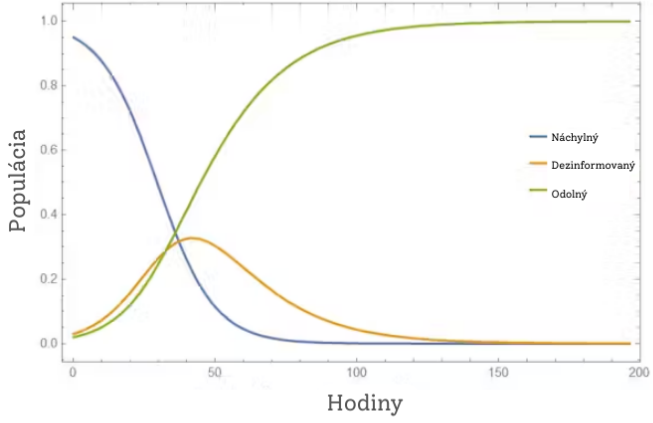


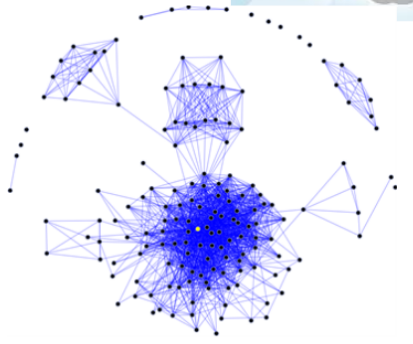
Epidémia

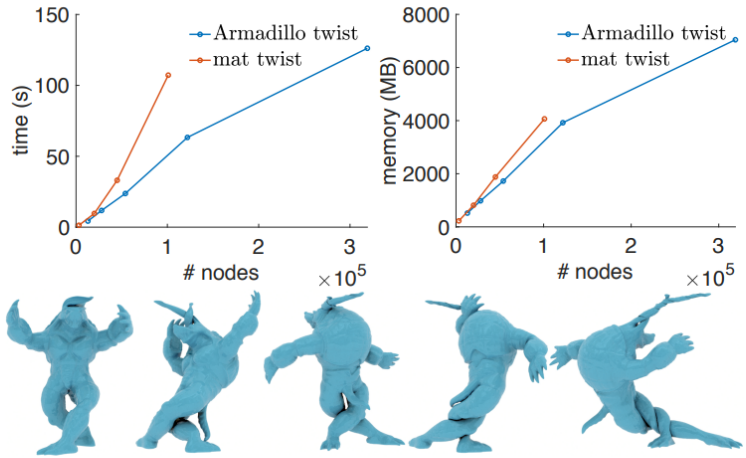
Bez aktívneho vyvracania dezinformácií

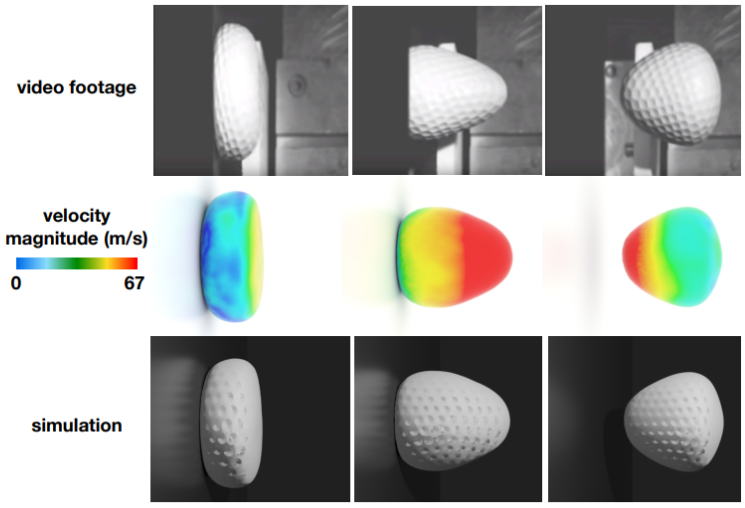


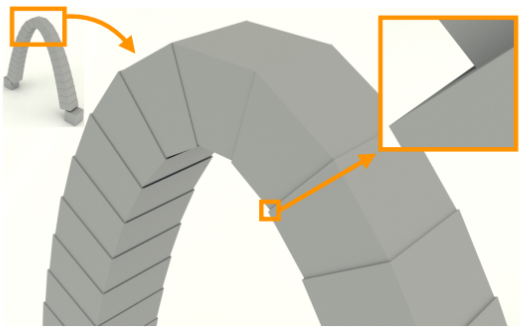
Aktívne vyvracanie dezinformácií

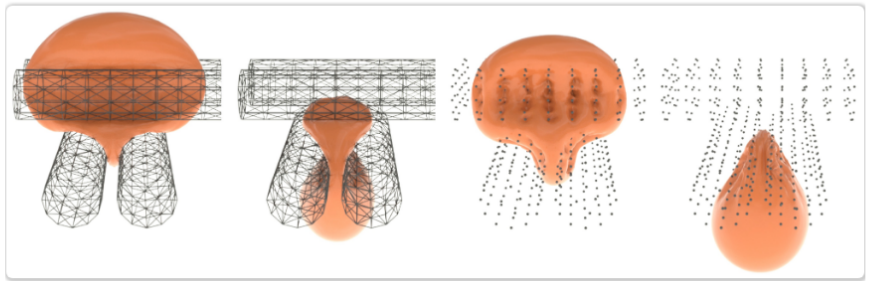






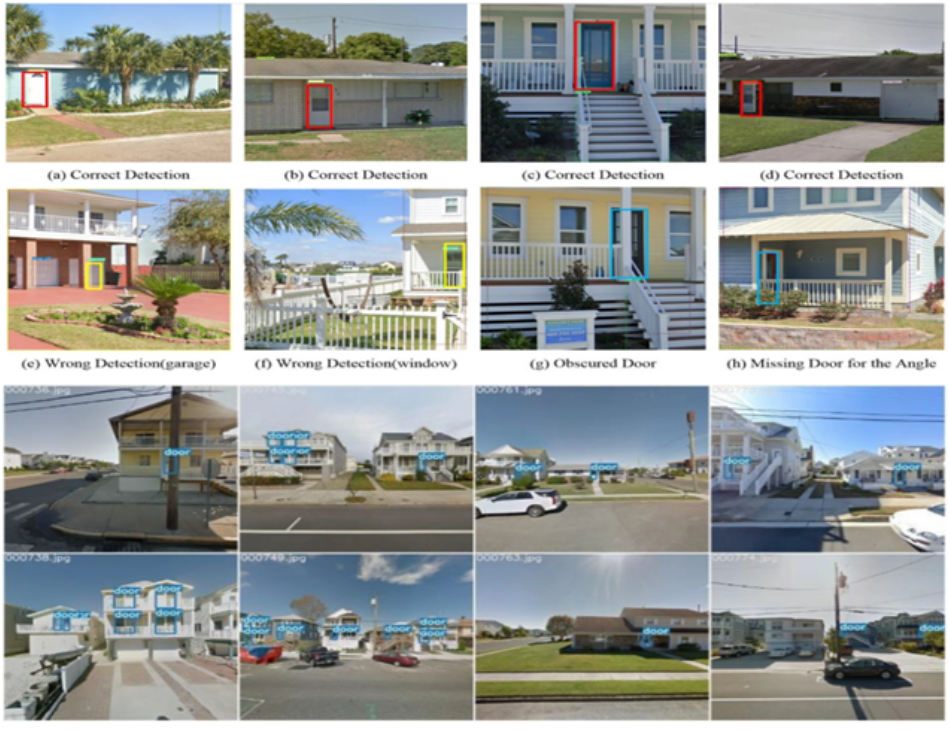


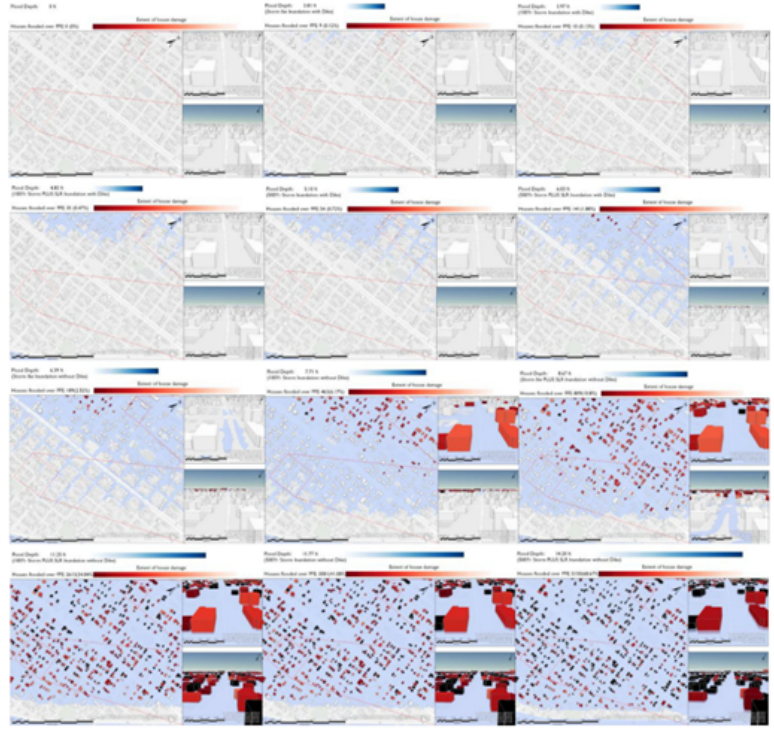


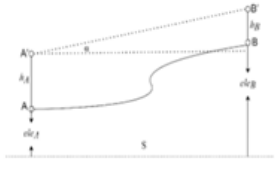


Incremental Potential Contact
https://ipc-sim.github.io/file/IPC-paper-fullRes.pdf

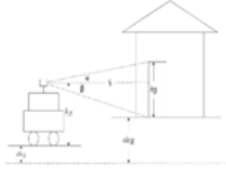
3D visualization of hurricane storm surge impact on urban infrastructure







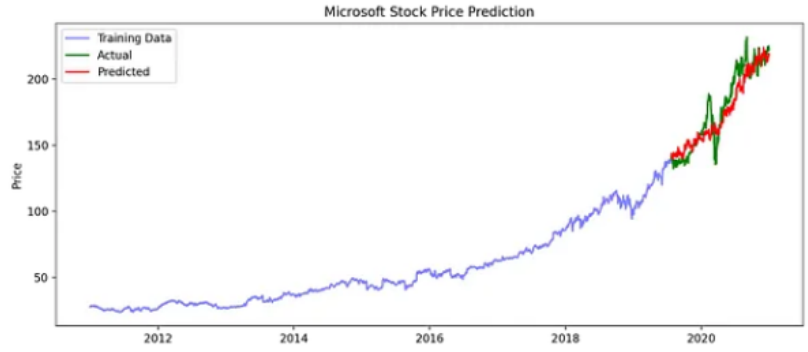
(a)The principle of triangulation



(b)The principal of calculating FFE

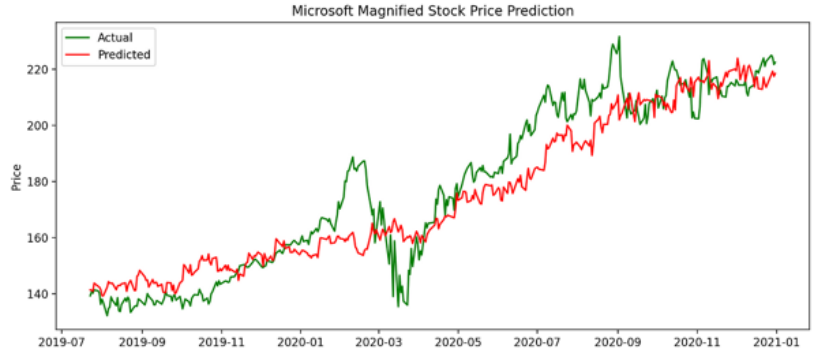
	10-Year Storm	Hurricane Ike	100-Year Storm	500-Year Storm
Base	2.36	6.39	7.71	11.77
Dike	2.05	3.81	3.97	5.10
SLR-Base	3.58	8.67	11.25	14.20
SLR-Dike	2.76	3.48	4.83	6.03

Predikce cen akcií pomocí AR modelů



A typical AR(P) model looks like this:

$$y_t = c + \phi_1 y_{t-1} + \phi_2 y_{t-2} \ldots + \phi_p y_{t-p} + \varepsilon_t$$



https://medium.datadriveninvestor.com/forecasting-stock-prices-with-autoregressive-models-a-hands-on-tutorial-8b5cbdfb4328

https://www.analyticsvidhya.com/blog/2021/08/vector-autoregressive-model-in-python/

https://www.investopedia.com/terms/a/autoregressive.asp