Crowd Dynamics and Escape Panic

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Our proposal is based on the paper “Simulating dynamical features of escape panic”[1]. The simulation itself is a model for crowd dynamics in evacuation situations, in other words, where space is a limited resource and panic is a factor. The model itself accounts for person-to-person and person-to-environment interactions, and it also evaluates the pressure felt on each individual . The objective is to reproduce the non-trivial turbulent flow of pedestrians in chaotic agglomerations, which has been the source of many accidents with fatalities, and identify the characteristics of potentially injuring situations. Our essential goal is to develop a fully functional code for the implementation of the model, with adjustable inputs and reproduce results of the paper.

Our possible further goals are:

- Changing the environment, either by adding or removing obstacles, develop strategies to optimize crowd flow and reduce casualties
- Allow a more realistic model by adding standard deviation for fixed parameters and see how it effects the time of escaping and number of injured people.
- Testing the model in a specific real life scenario (airplane, lecture room…)
- Adding complementary terms to the model (extra forces, extra parameters...)

1 D. Helbing, I. Farkas and T. Viscek, *“Simulating dynamical features of escape panic”*, Nature 407 (28 September 2000)