Pedestrian and Evacuation Dynamics 2008
To address the problem we propose to use classical optimization theory.

I Introduction

A summary of the main contributions of the paper is presented in the introduction. The paper is divided into three main sections: model formulation, optimization methods, and numerical results.
3 Demonstration Problem

The proposed optimization method is the RSM (Response Surface Methodology). The optimization process is conducted in two stages. In the first stage, a set of initial conditions is selected, and the optimization algorithm is applied to find the optimal solution. In the second stage, the optimal solution is validated using a set of experimental data.

2 The Methodology

Numerical Optimization Techniques Applied to Evaluating Damage

STEP 1: Define the Objective Function (OF) by selecting an appropriate damage metric. For example, the OF may be the total damage cost or the maximum damage. The objective is to minimize the OF.

STEP 2: Define the Design Variables (DV) and constraints. The Design Variables are the parameters that can be adjusted to influence the damage. The constraints are the limitations that must be satisfied, such as safety and cost constraints.

STEP 3: Conduct the Response Surface (RS) for a specific OF at the current value of the Design Variables. The RS is a mathematical model that approximates the relationship between the Design Variables and the OF.

STEP 4: Use the RS to predict the OF for a set of Design Variables. The predicted OF is compared with the actual OF to determine the accuracy of the RS.

STEP 5: Update the Design Variables by adjusting them to improve the OF. The updated Design Variables are used to conduct a new RS.

STEP 6: Repeat steps 3-5 until the OF converges to a minimum value or a maximum number of iterations is reached.