

# On numerical approaches to solve the generalized Nash equilibrium problem and their implementations in Julia

Tangi Migot, University of Guelph

January 23, 2020

## **Abstract**

The generalized Nash equilibrium problem (GNEP) is an  $N$  player game, where each player has to solve a non-linear optimization problem whose objective function and constraints depend on the solutions of the other players. The GNEP is becoming a very popular modeling tool with an increasing need for numerical methods with efficient implementation. In this talk, we present two numerical approaches to tackle the GNEP: a decomposition method and a method based on nonsmooth dynamical systems. These methods have been included in a Julia (<https://julialang.org>) framework to solve the GNEP. We finally present numerical results on a benchmark of games from the literature.