

**Title of Project:**

Developing a Web-based Application to Collect Data about Rogo Puzzle Difficulty

**Project Number: 38**

**University Project Leaders/Departments:** Dr Nicola Petty  
Department of Management

**Brief outline of project**

---

The project involves the development of a web application of Rogo, a route-finding number puzzle for amusement. The application will collect data from users in order to evaluate puzzle difficulty. The Creative Heuristic Research Group, within Management Science, developed Rogo, a pen-and-paper puzzle, in 2009. Information about Rogo can be found at <http://www.rogopuzzle.co.nz>. They have a programme of research investigating properties of the puzzle and developing tools to generate and improve it.

One question of interest to the Group is how puzzle instances can be classified by difficulty for and interest to puzzle solvers. In order to address this question data needs to be collected from puzzle solvers.

The project will develop a web-based application to allow users to play Rogo via the internet. The application will collect data about how long it takes to solve each puzzle, and which routes the user tries during the solving process.

Requirements for the application are:

1. Be compatible with all major browsers and through the web on iPad/iPod touch.
2. Provide an interface for the user to attempt a Rogo puzzle through a browser window.
3. Provide feedback when a 'good' score is achieved and for the best score.
4. Provide feedback when a loop is too long or too short.
5. Include player options to:
  - a. allow timed play.
  - b. show/hide the best and good score targets.
  - c. allow automatic score totalling.
  - d. allow automatic loop length counting.
6. Include server side options to fix some of the player options.
7. Provide an interface for the user to select from a set of available Rogos, possibly changing from day to day.
8. Collect relevant data on user interaction with the application to allow suitable analysis.

The application will be provided with a set of pre-generated Rogo puzzle instances including information about the best solution.

The student will develop and maintain a specifications document and scope the data collection requirements.

**Specific student requirements:**

---

The student must have programming experience in a web scripting language such as JavaScript and/or developing web-based applications.

**Special condition:**

n/a