



UNIVERSIDAD DE BUENOS AIRES  
FACULTAD DE CIENCIAS EXACTAS Y NATURALES  
DEPARTAMENTO DE COMPUTACIÓN

# Biased Random Key Genetic Algorithm for the Team Orienteering Problem

Tesis presentada para optar al título de  
Licenciado en Ciencias de la Computación

Alejandro Federico Lix Klett

Director: Loiseau, Irene  
Buenos Aires, 2017



# TODO TRADUCIR BIASED RANDOM KEY GENETIC ALGORITHM FOR THE TEAM ORIENTEERING PROBLEM

TODO Traducir: The team orienteering problem (TOP) involves finding a set of paths from the starting point to the ending point such that the total collected reward received from visiting a subset of locations is maximized and the length of each path is restricted by a pre-specified limit. In this thesis, a biased random key genetic algorithm (BRKGA) approach is proposed for the team orienteering problem. Also, In every population generation, the best N results are enhanced with a sequence of local search heuristics. Computational experiments are made on standard instances. Then, this results, were compared to the results obtained by Chao, Golden, and Wasil (CGW), Tang and Miller- Hooks (TMH) and Archetti, Hertz, Speranza (AHS). Though my results were very good and compete in most instances, in some they were not as good as mentioned previous works yet close enough.

**Palabras claves:** TODO Agregar 2 KEYWORDS: Team orienteering problem, Biased Random Key Genetic Algorithm, Maximized Profit, Y, Z.



## BIASED RANDOM KEY GENETIC ALGORITHM FOR THE TEAM ORIENTEERING PROBLEM

The team orienteering problem (TOP) involves finding a set of paths from the starting point to the ending point such that the total collected reward received from visiting a subset of locations is maximized and the length of each path is restricted by a pre-specified limit. In this thesis, a biased random key genetic algorithm (BRKGA) approach is proposed for the team orienteering problem. Also, In every population generation, the best N results are enhanced with a sequence of local search heuristics. Computational experiments are made on standard instances. Then, these results were compared to the results obtained by Chao, Golden, and Wasil (CGW), Tang and Miller- Hooks (TMH) and Archetti, Hertz, Speranza (AHS). Though my results were very good and competitive in most instances, in some they were not as good as mentioned previous works yet close enough.

**Keywords:** TODO Agregar 2 KEYWORDS: Team orienteering problem, Biased Random Key Genetic Algorithm, Maximized Profit, Y, Z.



## Índice general

1.. La guerra de las galaxias . . . . .	1
1.1. Infancia y juventud . . . . .	1
1.2. Rescate de la princesa . . . . .	1
1.3. Sacrificio y victoria . . . . .	1
2.. El imperio contraataca . . . . .	3
3.. El regreso del Jedi . . . . .	5





## 1. LA GUERRA DE LAS GALAXIAS

### 1.1. Infancia y juventud

*There's nothing for me now. I want to learn the ways of  
the Force and become a Jedi like my father.*  
–Luke Skywalker

### 1.2. Rescate de la princesa

*Here's where the fun begins!*  
–Han Solo

### 1.3. Sacrificio y victoria

*This will be a day long remembered.  
It has seen the end of Kenobi.  
It will soon see the end of the Rebellion.*  
–Darth Vader



## **2. EL IMPERIO CONTRAATAACA**



### **3. EL REGRESO DEL JEDI**

