

# Fitness landscape analysis for understanding and designing local search heuristics

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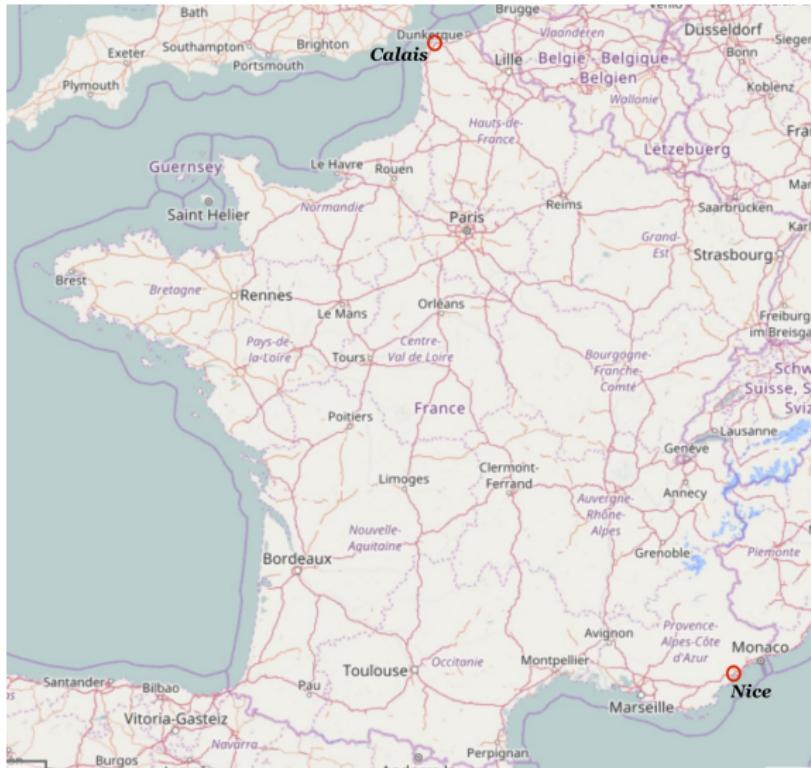
The 51st CREST Open Workshop  
Tutorial on Landscape Analysis  
University College London



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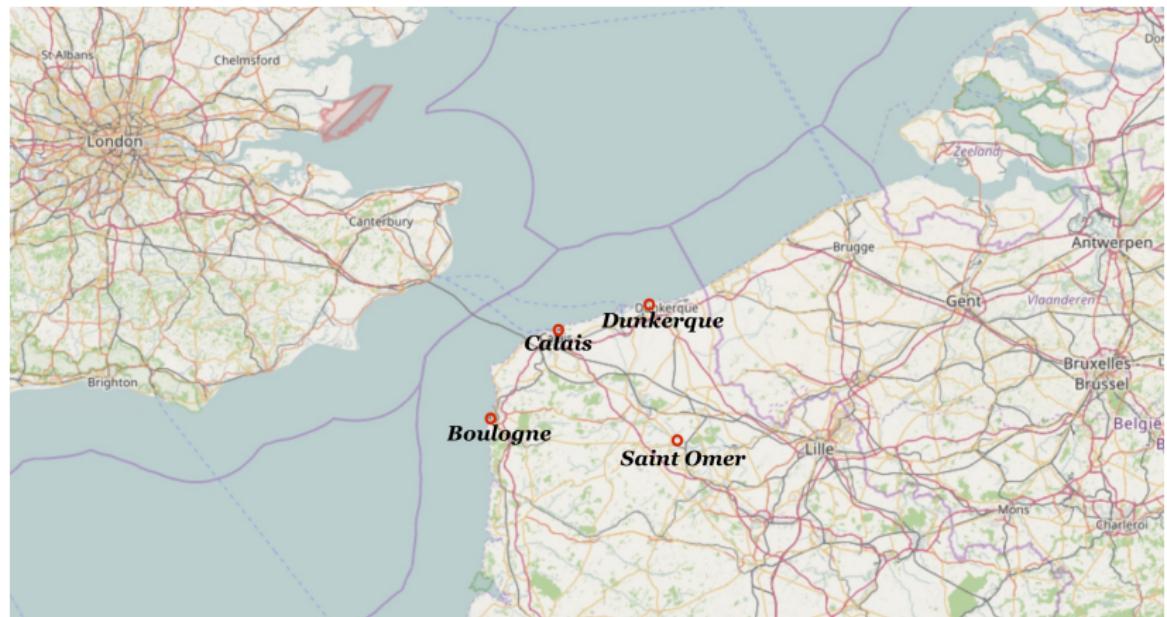
# Personal situation map



source : OpenStreetMap

# Situation map : Université du Littoral Côte d'Opale

Boulogne (fishing port), Calais (transportation port),  
Dunkerque (industrial port), Saint Omer (glass industry).



~ Lille (0h30), London (1h), Bruxelles (1h15), Paris (1h30), Amsterdam (2h)

# Outline of the day

- Basis of fitness landscape :
  - introductory example
  - brief history and background of fitness landscape
- Geometries of fitness landscapes :
  - multimodality, ruggedness
  - neutrality
- Local optima network :
  - Features of the network, design and performance
  - Performance prediction and portfolio
- Fitness landscape for multi-objective optimization problems :
  - brief overview of multi-objective optimization
  - features of multi-objective optimization problems
  - landscape aware design
- Examples and practical exercises :
  - an engineering design problem
  - cellular automata problems

Open Workshop

⇒ Open Questions Bar

## Introductory example

Please visit the "game" at :

[http://www-lisic.univ-littoral.fr/~verel/RESEARCH/  
fitness-landscape-game/index.html](http://www-lisic.univ-littoral.fr/~verel/RESEARCH/fitness-landscape-game/index.html)

or :

<http://www-lisic.univ-littoral.fr/~verel>