

University of Luxembourg

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PCOG Team Meeting 2018

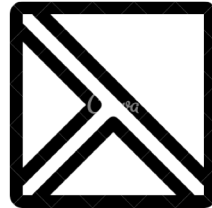
Boonyarit Changaival



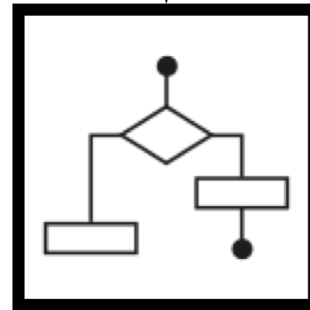
- A chaos-based memoryless graph traversal algorithm for big unknown graphs
  - Use chaotic attractors (Lozi and Rossler) for traversal
  - Yield higher discovery rate than Random Walk
- Fleet location for round-trip station-based carsharing (in collaboration with Examotive)
  - Increase user coverage
  - Increase convenience factors (can be extended to avoiding competitions)
  - Reduce car fleet size

# How It's (Really) Done

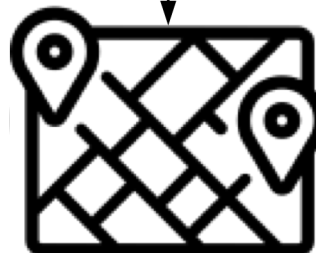
Street Network



Demographic data



Hybrid Metaheuristic Algorithm  
(NSGA-II + ENS)



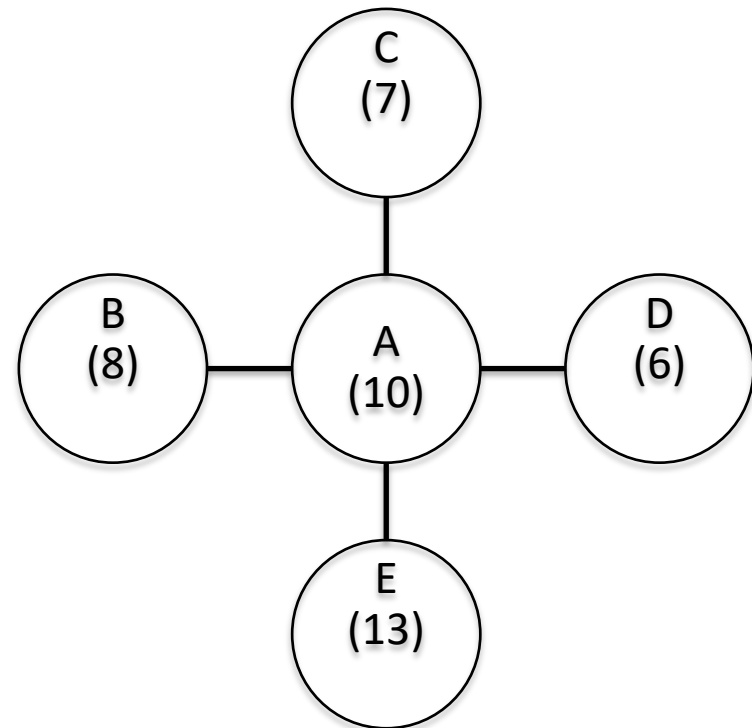
Result



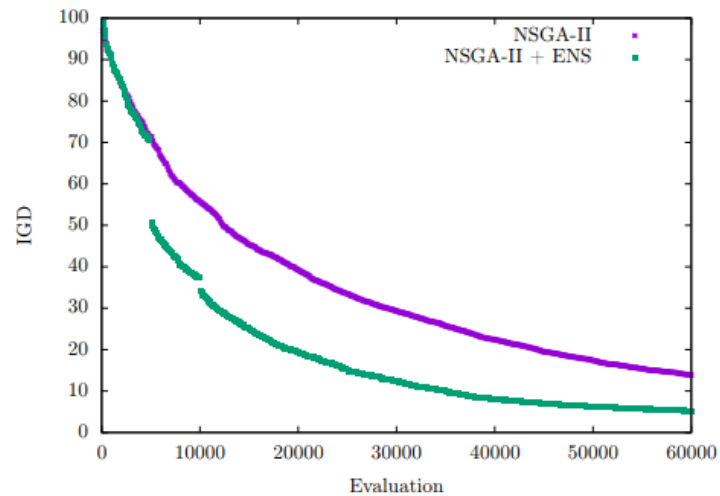
## FACULTY OF SCIENCE, TECHNOLOGY AND COMMUNICATION



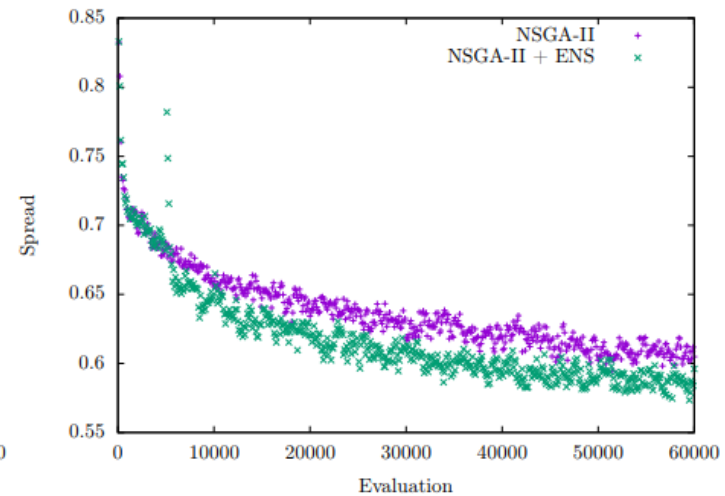
- Use NSGA-II as a base for the hybrid algorithm
- Introduce “Extensible Neighborhood Search (ENS)”
  - Utilize neighborhood concept in graph theory
  - Search for better location locally
  - Dominance-based local search
  - Extensible due to n-hop
- Submitted to EvoCOP 2019
- The results were used in the planning process at Examotive



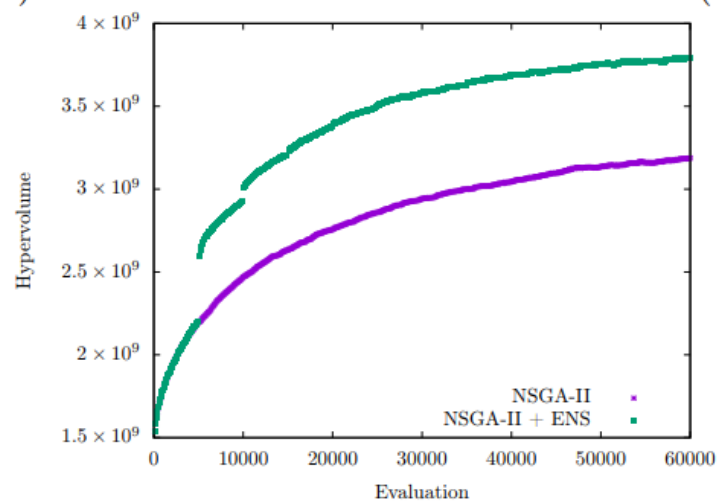
# It Gets Better



(a)



(b)



(c)

# Thank you

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