**Locally-informed proposals in**

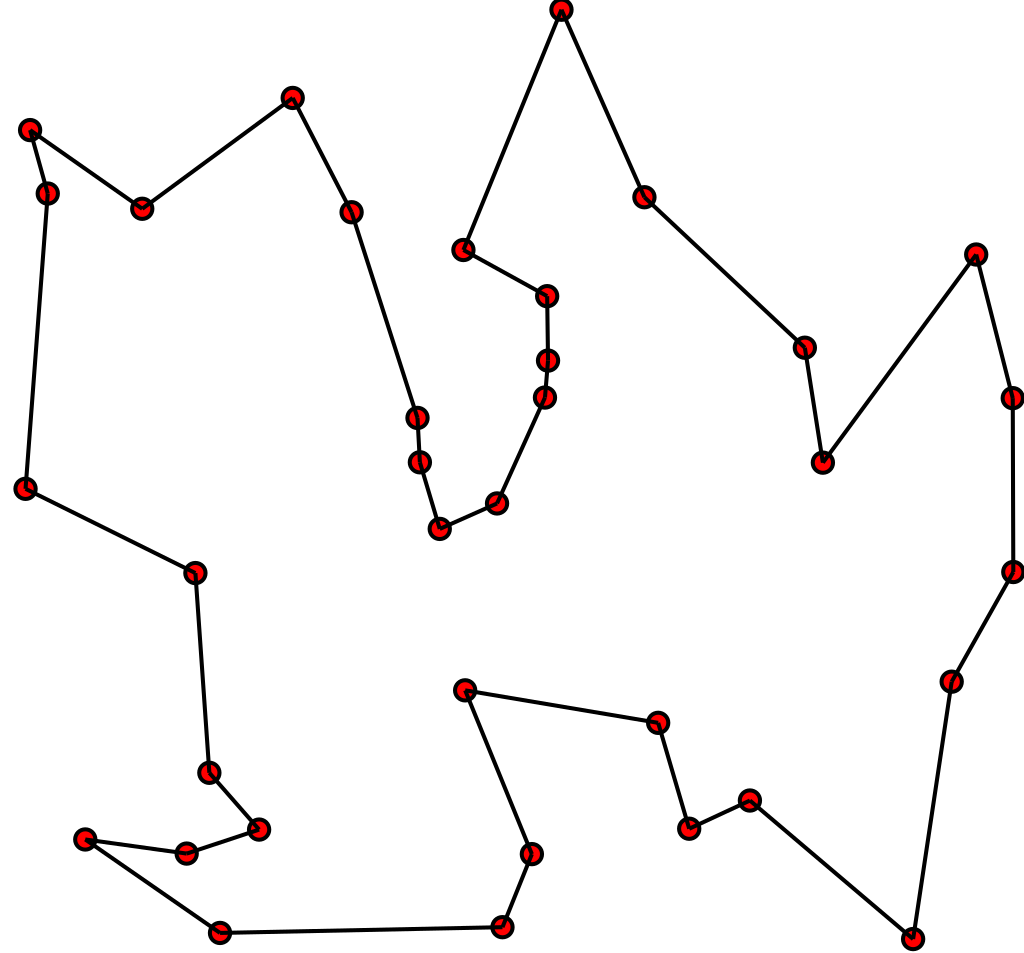
**Metropolis-Hastings algorithm with**

**applications**

**Bartosz Chmiela**[[1]](#footnote-2), **Paweł Lorek**2

1 *Mathematical Institute, University of Wrocław, pl. Grunwaldzki 2/4, 50-384 Wrocław, Poland*

2 *Mathematical Institute, University of Wrocław, pl. Grunwaldzki 2/4, 50-384 Wrocław, Poland*

Figure 1: Traveling salesman problem, source: wiki.

The Markov Chain Monte Carlo methods (abbrv. MCMC) are a family of algorithms used for approximating sampling from a given probability distribution. They prove very efective when the state space is large. This fact can be used to solve many hard deterministic problems - one of them being traveling salesmen problem, which asks for the shortest path that visits all of the cities exactly once. It will be used in this presentation to test a new approach of locally-informed proposals as a modifcation of well known Metropolis-Hastings algorithm. This approach uses locally computed distribution, that changes depending on candidate, at each step of Metropolis-Hastings algorithm. We will present the implementation of modified algorithm, experiments based on it, results and a comparison with previous MCMC methods.

1. Email: chmiela.bartosz@gmail.com [↑](#footnote-ref-2)