

The **Vienna Graduate School on Computational Optimization (VGSCO)** is a joint research and training program of the **University of Vienna**, **TU Wien**, **IST Austria** and **Vienna University of Economics and Business** funded by the **Austrian Science Funds (FWF)**. Its main goal is to give PhD candidates a comprehensive training in different areas of optimization with special emphasis on algorithmic and numerical aspects. It fosters scientific collaboration between the PhD students and their advisors representing a broad spectrum of topics and areas in the field of optimization.

The VGSCO currently announces a PhD position in the area of

Efficient Combinatorial Optimization Algorithms (University of Vienna, Supervisor: Monika Henzinger)

In the last decade huge data sets that are changing dynamically have arisen: For example, real-world graphs such as the internet or social networks have been created that are not static but are constantly modified by vertex and/or edge updates. Another example are representations of objects through points in high-dimensional space. Often new points are added, while some points become outdated and are removed. The main topic of this thesis project is the development and analysis of efficient algorithms for maintaining properties of dynamically changing objects.

Properties of interest are: clustering algorithms in metric spaces such as the k-means algorithm, graph properties such as the maximum flow or minimum cut, and approximate solutions of NP-hard problems. To analyze the asymptotic complexity of the algorithms the project will include both upper and lower bounds. An experimental evaluation on real-world data sets is also desirable.

The candidates are expected to have a strong background in the theoretical analysis of algorithms and data structures as well as implementation experience.

The advertised position is associated with the Faculty of Computer Sciences of the **University of Vienna** in the Research Group on Theory and Application of Algorithms of **Prof. Monika Henzinger, PhD**. The successful candidate will become a member of the **Vienna Graduate School on Computational Optimization**. The duration of the employment is of 3 years with possibility of extension. The extent of employment is 30 hours per week. The annual gross salary is approximately 31,000 €. The planned start of the position is autumn 2020.

Application Requirements and Procedure

The candidates must have a master degree (or equivalent) in *Computer Science (or subfields of Computer Science), Computational Science, or Mathematics* at the moment the PhD position starts. The application documents should contain a letter of motivation; the scientific CV with publication list, if available; higher education certificates/diplomas; the diploma/master thesis and letter(s) of recommendation. Applications have to be submitted at: vgsco.univie.ac.at/positions/application. The deadline for applications is **June 15, 2020**.