# Abstract

In the following document I will present a short overview on chapters for „*Artificial intelligence in real-time strategy games*”.

The first chapter entitled „**Introduction**”, presents advances made in the field of artificial intelligence used in the gaming industry , definitions regarding the terms used and a some common traits from traditional strategy games. Also I have described my motivation towards the domain of artificial intelligence and AI competitions.

The second chapter entitled „**Application programming interface (BWAPI)**” presents relevant informations regarding the API used to create an AI agent and the capability of pipe-ing and seeding informations to the game in real-time. A list of capabilities is enumerated in order to present important features that the API provides.

The third chapter entitled „**RTS Sub-Problems**” describes a categorization of the problems meet in RTS games in order to be approachable and dividing large scaled problems in sub-problems that allow developing and planning a good architecture for the upcomming agent. The categories mimic a military command hierarchy, both in terms of cammands as well as information processing. This chapter mainly refers to the problems of *Strategy*, *Tactics* and *Reactive control* and describe a generic behaviors fashion how RTS agents treat and divide this type of problems.

The fourth capter entitled „**KBot**” presents a StarCraft AI agent created with the purpose of analyzing better methods to optimize agents by improving cyclical computations and asynchronous frame management. I have pointed how the agent uses data collecting methods and action ordering systems to perform several tasks to receive information from the environmental output. In this chapter, I have also presented the application structure grouped on different abstraction levels, a short overview on the frame management system, and real-time performance analysis method. This chapter mainly focuses on the algorithms that were used, their workflow descriptions and examples from the agent’s code.

The last chapter entitled „**Conclusion**”, I present my constributions regarding optimizations for frame computations, map analysis algorithms, and data handling that I used when developing my AI agent (Kbot). Also I have pointed what I would like to follow in my future work in the domain of artificial intelligence.