Temporal logics are a very popular family of logical languages, used to specify properties of abstracted systems. In the last few years, many extensions of temporal logics have been proposed, in order to address the need to express more than just abstract properties.

In our work we study temporal logics extended by *local constraints*, which allow to express quantitative properties on data values from an arbitrary relational structure called the *concrete domain*.

An example of concrete domain can be $(\mathbb{Z}, <, =)$, where the integers are considered as a relational structure over the binary order relation and the equality relation.

Formulas of temporal logics with constraints are evaluated on *data-words* or *data-trees*, in which each node or position is labeled by a vector of data from the concrete domain. We call the constraints *local* because they can only compare values at a fixed distance inside such models.

Several positive results regarding the satisfiability of LTL (linear temporal logic) with constraints over the integers have been established in the past years, while the corresponding results for branching time logics were only partial.

In this work we prove that satisfiability of CTL^* (computation tree logic) with constraints over the integers is decidable and also lift this result to ECTL^*, a proper extension of CTL^*.

We also consider other classes of concrete domains, particularly ones that are "tree like". We consider *semi-linear orders*, *ordinal trees* and *trees of a fixed height*, and prove decidability in this framework as well. At the same time we prove that our method cannot be applied in the case of the infinite binary tree or the infinitely branching infinite tree.

We also look into extending the expressiveness of our logic adding *non-local* constraints, and find that this leads to undecidability of the satisfiability problem, even on very simple domains like $(\mathbb{Z}, <, =)$ or $(\mathbb{N}, <, =)$. We then find a way to restrict the power of the non-local constraints to regain decidability.