

Abstract. In this thesis we are going to deal with constructing *parallel* tangent vector fields on discrete surfaces. At first, we are going to present theory of tangent vector fields on smooth surfaces in \mathbb{R}^3 , define notion of *connection*, which will help us describe tangent vector fields, and we will formulate corollary of *Poincare-Hopf theorem*, that will tell us that on most surfaces smooth tangent vector field which is nonzero at every point does not exist. Then we are going to introduce analogies of notions from differential geometry for discrete surfaces, which we represent by triangular meshes, and we are going to explain how to use these concepts when constructing tangent vector fields that are parallel at the whole surface. At the end we are going to describe algorithm for constructing these vector fields, which can be found in the electronic attachment, implemented using software *Wolfram Mathematica*, and we will show its results on several examples.