Abstract: We will describe a family of models which aims at learning continuous representations (or embeddings) of the nodes of a social network in a latent space. The goal of this learning will be twofold: first it will allow us to deal with heterogeneous networks, to perform classification simultaneously on different types of nodes and given different sets of possible labels. In that case, the latent space will correspond to a unified space where the inference can be made conjointly on all the types of nodes. Second, we will show that it is possible to model information diffusion as a heat diffusion in such a latent space, resulting in a model able to predict how information spreads. Moreover, the projection in a continuous space will allow us to propose a new family of methods that consider the content of the message that diffuses. Experimental results concerning the two models will be presented showing the ability of this family of models to outperform classical algorithms, and to greatly reduce the complexity of the resulting techniques.