

M. Sc. Thesis proposal

The half-life and reachability network of a tweet

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This proposal is for a 4-6 months M.Sc. thesis in the field of **Social Network Analysis**.

It is sometimes mentioned, anecdotally, that the half-life of a tweet is very short, around 24min, see e.g. <https://thextraordinarionly.com/half-life-of-a-post-on-twitter>, although a serious scientific analysis on the topic has apparently not been published so far. The half-life measures how much time it takes for a decaying quantity to halve its concentration, but it is also related to the time constant of a linear system. For this thesis, we are interested not only in the time horizon, but also on the spatial axis: thinking of retweets as messages that propagate on a social network of contacts, we want to understand how far a tweet propagates in average. In this case measures of network centrality will be used to quantify the depth and breadth of the spreading.

The aim of this project is to compute Twitter half-life and spatial reach using tools from linear systems theory and network theory, using large-scale data from Twitter posts.

The work will consist of the following phases:

1. assembling a tweet database, by collective massive amounts of tweets from internet;
2. analyzing the dataset, constructing the underlying “social network”;
3. build a dynamical model that represents the spread of tweets through the network.

The student must be skilled at data mining (this is particularly important for the first phase), and must have a knowledge of linear system theory.