

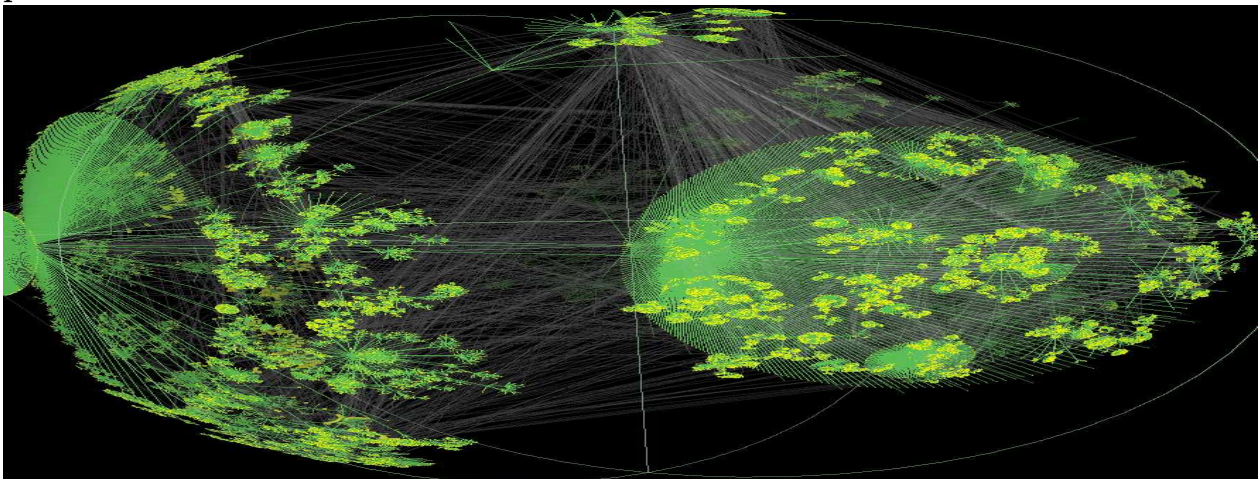
Masterarbeit

Modeling of Cyberspace Dynamics

The study of complex networks has received considerable attention in recent years. We are used to the fact that we are living in a world where various sorts of networks can affect our lives.

One of the biggest and most important technological networks is the Internet. We aim at understanding and modeling the dynamics of various structural network aspects of the Internet. The growth of the Web follows certain topological and structural patterns discovered in the theory of scale-free networks and small worlds (e.g. see M.E.J.Newman, *The Structure and Function of Complex Networks*, SIAM Review, vol 45, No 2, pp 167-256, 2003; R.Albert and A-L.Barabasi, *Statistical mechanics of complex networks*, Reviews of modern physics, vol 74, pp 47-97, 2002). Furthermore, new aspects related to the saturation and steady state transitions are of interest today. New and efficient algorithms for modeling of the Internet structures lies also in the core of search algorithms developed and used in search engines like Google.

The proposed project would focus on measurement, modeling and simulation of complex networks with focus on Internet dynamics. Another direction can be more practical focusing on software for simulation of processes for very large networks and the methods how to estimate and influence global network parameters.



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