# Input and Sharing of Infectious Disease Data at the Grassroots Level

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## Abstract

This project creates and models the implementation of a user-friendly database and interface which can be used to enter and manipulate data on individual patient case reports. The goal is to make meaningful patient data easily available both for doctors in the field and scientists studying disease outbreaks.

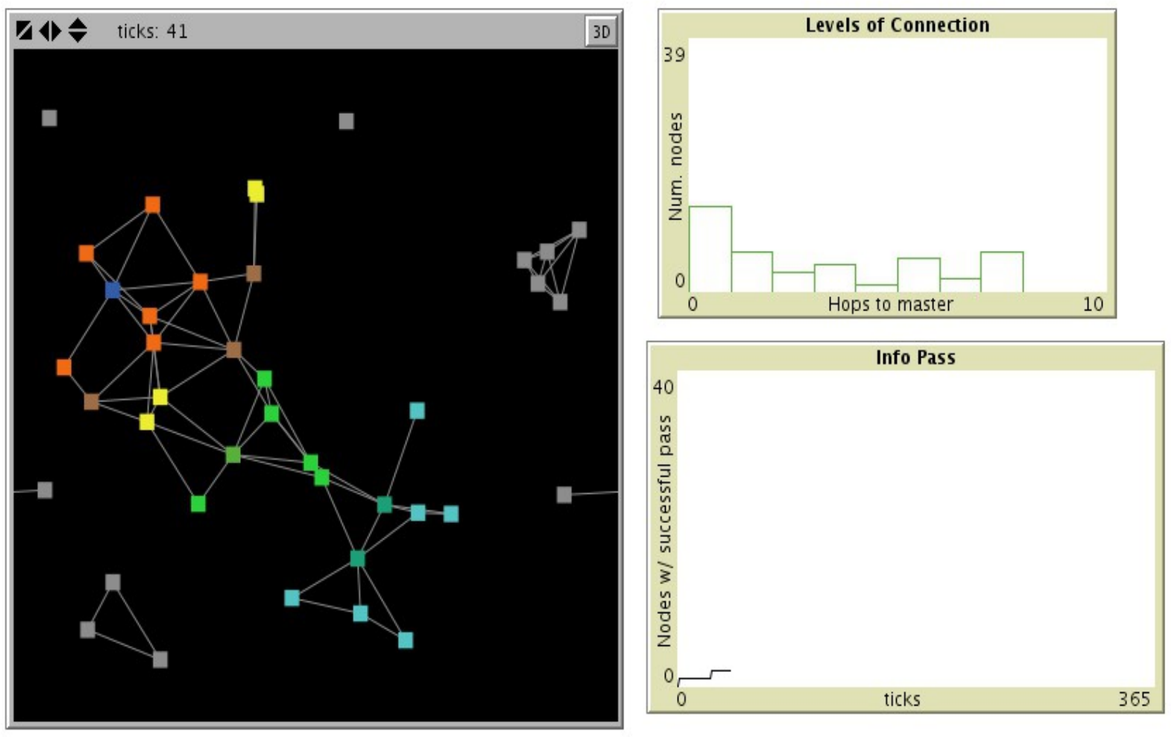


Figure 1: The NetLogo model.Left: visualization of levels of connection to the master-node. Right top: histogram of nodes with different levels of connection. Right bottom: Number of nodes with successful information passing after 41 ticks.

## Background

Development of the user interface/database system was guided by a series of principles. These included that all software be open source, that the program be efficient to use and have a small footprint, that the system be useful to all users, and that there be consistency throughout the program. The NetLogo model was designed based on the capabilities of an OLPC laptop, with emphasis on the specifications for mesh networking.

## Discussion

The first phase of this project created a user interface in PHP and HTML, which accessed a MySQL database. In the second phase, the interface was recreated in Java, and redesigned in order to better comply with specified project goals. In the third phase, a NetLogo model was designed to investigate the potential networking capabilities and limitations of the system.

## Results and Conclusions

The interface/database system was successfully created to meet the specified design criteria. The NetLogo model of the implementation of such a system revealed that successful transfer rates improved with increased density of network nodes in the area. However, multiple improvements to the model must be made before it can produce reliable data.

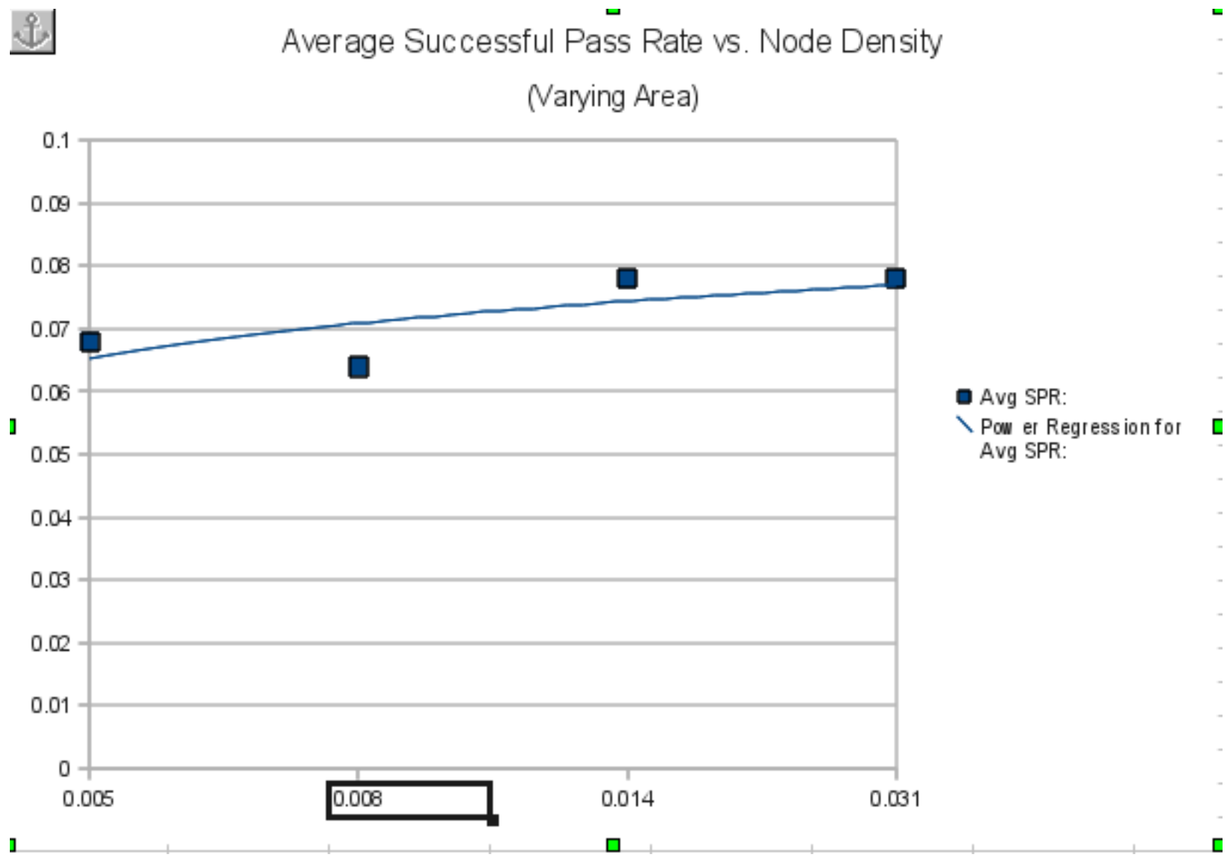


Fig 2: The average successful pass rate of nodes versus the density of nodes (number of nodes per unit area).