

NodeRunner: An Embodied Game for Understanding Mesh Networking Concepts

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Abstract

The topology and constitution of network infrastructure shapes a crucial dimension of our understanding of information and sociotechnical systems in a networked environment. Infrastructure decides how and what information can be transmitted at a technical as well as a social level. Significant research programs, along with various artistic and pedagogical interventions, have sought to illuminate this dimension. NodeRunner is an embodied reflection on the roles and knowledges required to build and maintain an emerging form of infrastructure deployment: mesh networking. As mesh networking concerns new technologies and ways of organizing communities around shared infrastructure, it requires heightened examination from the information research and iSchool community. The session will begin with a 30 minute discussion designed to introduce mesh networking concepts, provoking discussion on how mesh networks have been used and how they challenge existing economic relations in infrastructure. This will lead into 60-90 minutes of ‘play-time’ where we will deploy an embodied game at a suitable site.

Keywords: infrastructure; network; mesh; embodied pedagogy; critical making

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Contact: <https://github.com/dcwalk/performingmesh>

1 Key Participants

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2 Description

The topology and constitution of network infrastructure shapes a crucial dimension of our understanding of information and sociotechnical systems in a networked environment. Significant research programs in information and related disciplines have sought to illuminate this dimension (?). In recent years, artistic and pedagogical explorations of community and individual relationships to the internet have emphasized exposing and illuminating these infrastructures (?, ?, ?). At both an infrastructure and application architecture layer, internet service provision has traditionally taken the form of a client-server model, where network nodes connect directly to the main internet backhaul. Alternative structures have captured the interest of information researchers for many years - key among them is the concept of mesh networking. Mesh networking allows multiple users to not only share connections, but to route those connections directly through other network members, enabling a topologically dynamic network and lessening dependence on the capitalist-consumer model of private internet service provision. Recently, community networks have emerged using mesh networking to build and manage their own infrastructure for public internet access (?, ?, ?, ?, ?). This model entails not only a shift in the power structures of internet ownership (?, ?), but necessitates a diffusion of the knowledge required to keep these modular infrastructures stable (from academia and industry to the broader public).

NodeRunner is an embodied reflection on the roles and knowledges required to build and maintain these networks. The concept of mesh networking is explored through a dynamic and interactive game that prompts participants to co-design a network while addressing the types of problems that arise when deploying this technology. At least 10 participants take the roles of geographical, technological, and human actors involved in establishing and maintaining a community wireless network.

The goal of the game is for the players acting as a community to collectively send enough messages around its local mesh network, working through stages of increasing difficulty. The successful movement of enough people around a space signifies a ‘working’ network. From time to time, events will come up that get in the way of network expansion. The organizers, working with technologists and residents, will have to overcome these challenges in order to grow and maintain a healthy network! More information, including detailed rules and game components can be found on our project page at <https://github.com/dcwalk/performingmesh>.

3 Purpose and Intended Audience

Our intended audience include information or communications scholars looking to learn more about networking in a fun and performative way, or anyone interested in trying out embodied techniques for teaching digital/information literacy concepts. Since community networking aims to empower existing inclusive communities, NodeRunner is similarly designed to be accessible to all manner of participants.

A key outcome will be the facilitation of dialogue between researchers and educators who work in this area in conjunction with public organizations. NodeRunner revolves around communication and teamwork, and stresses the communicative dimensions of both design and maintenance of network infrastructure. A previous run of this event brought together mesh networking activists from Detroit, D.C.-based members of the Open Technology Institute, members of our lab, and assorted others from the general public and academia. We hope to further similar public-academic partnerships by running this event at the 2016 iConference.

4 Proposed Activities

The session will begin with a 30 minute discussion that will introduce mesh networking concepts, offering discussion on how mesh networks have been used and how they challenge existing economic relations in infrastructure. Following this, the game mechanics and goals will be introduced. This will lead into 60-90 minutes of ‘play-time’ where we will move to a suitable site. Active play and observation are both welcome, and the participation cap will be flexible depending on the session space.

5 Relevance to the Conference

Infrastructure decides how and what information can be transmitted at a technical as well as a social level. As such, the political economy of network infrastructure is of great importance to researchers - and, increasingly, to educators and technologists - working to build capacity across communities. As it concerns new technologies and ways of organizing communities around shared infrastructure, mesh networking is a practise that deserves further study from the iSchool community. Policy researchers and practitioners might consider how it facilitates or problematizes access to information, while library scholars might investigate how the library could play an anchoring role in alternative infrastructures and community engagement with information structures and critical information scholars might be interested in the ways that NodeRunner explores alternative distributions of power in infrastructure, while all players have the potential to appreciate engaging in embodied, pedagogical design experience.

6 Length of Event

Total time for the session is 2 hours.