

Drawing Organizational Charts with VIVO

Overview

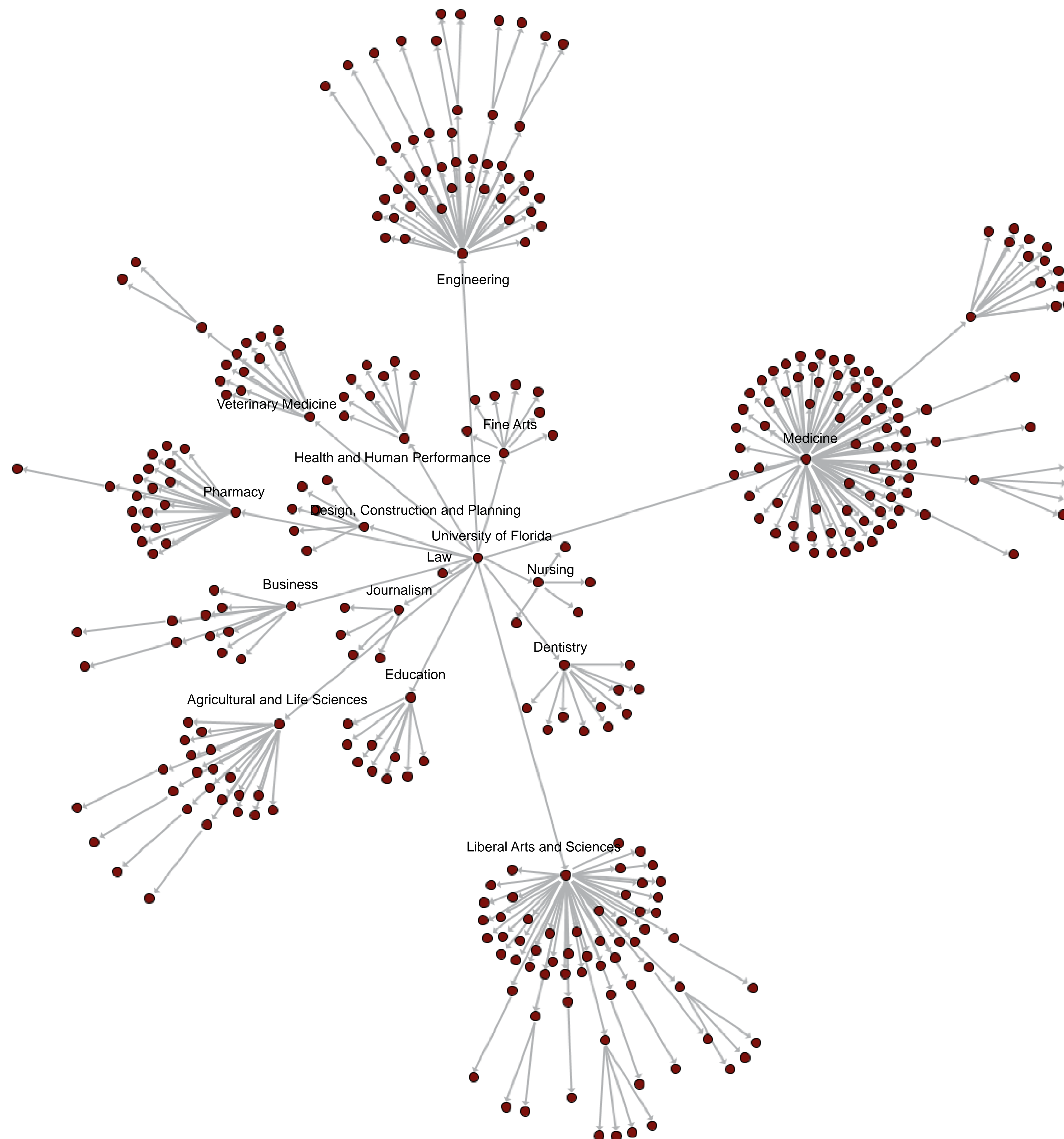
Abstract

VIVO provides complete information on organizational structures of institutions. Each organization object in VIVO has parent and child organizations. Starting at any particular organization, it is easy to use a simple recursion algorithm to traverse the organizations that report up to the starting point. If the starting point is the institution "root", the algorithm will produce an organizational chart for the entire organization. Using Ruby and some open source extensions, we have developed simple software to draw pictures of organizations. We will present code, algorithm, commentary and sample output. All code is available as open source at http://github.com/arockwell/vivo_org_chart/

Purpose

- One of the goals of VIVO is to show which organizations, faculty, staff, and students belong to.
- UF's academic structure is highly complex and does not correspond to its financial structure.
- UF does not have a facility to create organizational charts. Most organizational charts are created by hand.

Graph of all Colleges, Departments, Centers & Institutes at UF



Practical Uses

Visualizing the Organization Structure

The structure is generally regular and has 4 levels:

- University of Florida (the root of the graph)
- Colleges
- Departments (along with some Centers and Institutes)
- Centers and Institutes

Some organizations do not fit into this pattern. For example, organizations at the college level with no sub-organizations stick out on the graph.

Finding Data Integrity Problems

Looking at graphs generated by the program has uncovered many problems in our data, including missing, misplaced, and duplicated records. Without graphs, we might not have been able to find these inconsistencies.

We can understand organizational structure much faster by looking at the graph rather than manually following the links from one organization to another.

Finding all UF Organizations

We added over 100 external organizations to VIVO during CV entry of the showcase departments. As a result, it is no longer possible to consider all entries in our database to be UF organizations. Since SPARQL cannot do recursive queries, there was also no way to find automatically all sub-organizations at UF.

We added a rootOrganization data property to the local ontology. This property allowed us to directly mark sub-organizations as being part of UF. Solving this problem alone likely justified the time spent writing the program.

Challenges

Drawing Graphs with Labels

- Drawing graphs with 500+ nodes and corresponding labels is extremely difficult.
- We made two major attempts to prune the graph:
- Removing all non-college organizations that are direct children of UF left 300 nodes remaining. The graph in the center of the poster shows these nodes.
- Removing all non-college and non-department nodes from the graph left ~150 nodes. These nodes are the basis for an interactive version of the graph that includes labels.
- We created over 100 graphs during the making of this poster.
- Tweaking the settings on graph drawing programs (Graphviz and Network WorkBench) consumed more time than any other part of this project.

Further Research

Extending to People

We plan to include people in graphs for a college or department, which will be particularly challenging.

- UF's VIVO will include close to 30,000 people by the end of the grant.
- We lack reliable data linking people to departments.
- We need to import data to show the heads of departments.

Program Design

