A Flexible Tool for the Visualization and Manipulation of Musical Mapping Networks

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This thesis project presents MapperGUI, a cross-platform graphical tool for the manipulation of musical mapping networks. Most digital musical instruments (DMIs) gather gestural input from musicians by way of electronic sensors and transform these data into sound through separate synthesis engines. The mapping of control inputs to synthesis parameters in DMIs is arbitrary, multi-faceted and extremely important as to their effectiveness. Software mapping tools exist to aid in this process, attempting to make the task of musical mapping more transparent, swift and configurable.

The libmapper software library, developed at the Input Devices and Music Interaction Laboratory, creates a standard framework for DMIs to communicate data on a distributed network and to map their signals collaboratively and in real-time. MapperGUI presents a graphical user interface for libmapper networks, allowing non-expert users to manipulate the text-based system. The interface aims to be flexible, such that it can accommodate the vast array of musical networks and tasks that must be performed when mapping. To this end it provides multiple, independent visualizations and interaction modes within a single framework.

This document explores some of the issues challenging the field of musical mapping, and describes the motivations behind the MapperGUI project in this context. Relevant research in the fields of data visualization and interface design is summarized and applied to the task of creating a graphical user interface for libmapper networks. Prior graphical interfaces for libmapper are examined for successful features that can be incorporated into MapperGUI. Specific challenges of implementation and features of the final program are described. Insights gained from interviews with users of MapperGUI are presented, along with future work and possible extensions for the interface.

MapperGUI is available for free download as a standalone application at `www.libmapper.org/downloads`. All code is open-source and can be accessed at `https://github.com/mysteryDate/webmapper`.