

MAMBO - Multiplayer Arrow Matching Ballroom Orchestrator  
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We aim to create a system that will allow users to play a Dance Dance Revolution-style game. As in DDR, players will interact with a system via a dance mat with four pressure-sensitive arrows on it. On a monitor (connected to the FPGA via VGA, perhaps), players will be indicated of a sequence of arrows; their job is to stomp on the arrows on the pad in a corresponding pattern. Rather than create a dance mat from scratch, we have found cheap USB-compatible mats on Amazon; we imagine we will be able to connect one of these to the FPGA. Finally, as a stretch goal, we hope to implement automatic chart generation (where a “chart” is the sequence of arrows that players must match). Specifically, we will allow some sort of interface via which players can provide their own songs (perhaps via a USB thumb drive), which are then read by the FPGA. It will then apply several signal processing techniques on the audio file (e.g. beat detection and instrumentation analysis), to generate a sequence of arrows that adequately complements the music.