Project intent: Jim

Jim is a puppet-like robotic head with the ability to express human emotional states via gestural movements of a small number of degrees of freedom. Jim’s reproduction of these states is low fidelity, especially relative to high-end robotic systems. Jim can also be outfitted with a speaker to enable vocal production, which is currently limited to recorded human speech. Jim does not currently have a primary operational application. This project is intended to develop an AI underpinning for Jim which will provide emotional and personality models which take control of Jim’s expression of emotion in response to pre-processed external stimuli.

Target application(s):

1. AI education. The primary target application of Jim is the AI classroom. A fully operational Jim will have a tunable personality (response pattern to stimuli) which will allow students to probe model parameters and tune the personality to simulate assorted human personalities. Further, a standard personality Jim can serve as a means to analyze and benchmark systems for processing and annotating the affective content of assorted potential stimuli (e.g. textual input).
2. Tinkerer/user platform. A secondary goal is to make an open-sourced version of the Jim hardware and software systems which is available for individual users to build and operate as a low-cost/low-difficulty entry point into affective AI. A template for the approach is the highly successful Prusa 3D printer.
3. Artistic performance. As a novelty(?) application we are considering a system of Jim units or a coordinated team of Jim and a human partner as an AI equivalent of a stage act, simulating a comedic routine (e.g. ventriloquist and dummy). This would require outfitting a Jim unit with real-time speech to text and affective processing capabilities or a secondary digital channel for inter-unit communication to supplement audio presentation.

Team and staffing:

1. The primary Jim team is Dr. Debra Burhans, Mr. Jon Mrowczynski, and Dr. Robert Selkowitz. Dr. Burhans teaches AI courses and mentors student AI projects, and can deploy test models of Jim in her courses/student projects. Additional team members may be drawn from Canisius and Daemen College undergraduate students. Dr. Michael Wollowski of Rose Hulman Technical Institute may be recruited to also test the system with students at his institution.

Funding goals:

1. Equipment: we’ll need funds to cover the cost of constructing a set of Jim units, as well as for the purchase of secondary equipment (software packages, computer hardware, electronics, etc). This should/could include setup on a maker facility at Daemen.
2. Salaries: Summer salary for Burhans and Selkowitz, stipends for 3-4 undergraduate students at a time, plus some salary for Mrowczynski. We might also want to look into a stipend for a third party user to introduce a Jim component in an AI course (Wollowski?)
3. Travel: We could aim for one conference trip worth of travel money per primary person per year plus a little bit more to help bring students. We can use AAAI/EAAI costs as a baseline if we want, which would be on the high end.