TURBOJET ENGINE TEST STAND

DANIEL BACH AND GARY GO ME '15
ADVISOR: GEORGE DELAGRAMMATIKAS

We designed, specced, and constructed a test stand for a turbojet engine.

dreadWah

JOSEPH COLONEL AND GABRIEL LOPEZ EE '15
ADVISOR: TIM HOERNING

dreadWah is an automated Wah-Wah guitar effect. An Arduino controls two motors that randomly drag a piece of graphite across a drawing. The contact between the graphite and the drawing creates a resistance that varies the resonance and tone of the effect circuit. This effect circuit alters the input audio, similar to the effects used in Funk music.

VACUUM TUBE PRE-AMP

AVI GADISH EE '15 AND DENNIS GAVRILOV EE '16
ADVISOR: TIM HOERNING

In satisfaction of a ECE314 “Audio Engineering Projects” project utilizing antiquated technologies, a vacuum tube pre-amplifier circuit was designed and prototyped. A vacuum tube is a voltage amplifier, which was slowly phased out after the invention of the transistor. Vacuum tubes distort waveforms differently, and more harmonically, than a transistor, which is the reason vacuum tubes are still sought after by audiophiles around the world. In addition to ‘Gain’ and ‘Level’ control, the design of the Tone Stack from the Fender Super Reverb guitar amplifier was modified and implemented in our pre-amp.

CMOS/TTL ALIEN INTRUDERS

MAX MOGEL ME '18, ADVISOR: YASH RISBUD

LATHE

PETER ASCOLI, KEITH CASKEY, ANDREW TALLAKSEN, AND HENRY WANG ME '15, ADVISOR: ESTUARDO RODAS

We custom designed, specced and built a lathe for the student machine shop.

ARM

HARRISON CULLEN, ALYSSA DAVIS AND JENNIFER TASHMAN BSE '15
ADVISOR: TOBY CUMBERBATCH

Arm is a life-sized endoskeletal structure that mimics the movement of a human arm. Computer-controlled linear and rotary actuators are used to operate Arm, and the automaton is programmed to perform and communicate its human-like features. Freud's theory of the Uncanny was employed in order to contextualize aspects of a biomimetic robot based on the response evoked from a human audience. Arm's main endoskeletal structure is made entirely of brass, and is manufactured in a manner that seeks to manipulate simple motor functions to subsequently produce a more nuanced and believable representation of human motion. All moving parts are exposed in order to provide an easily understandable, and ultimately more inviting, mechanically performative experience.