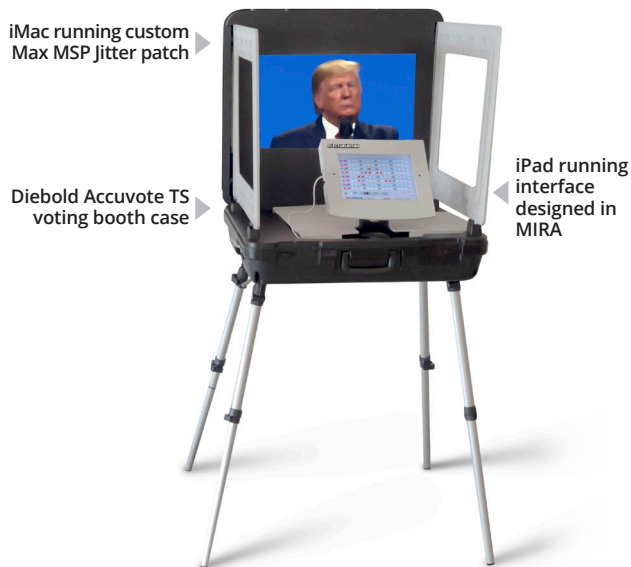


USER GUIDE

a project by
Mike Richison



Electo Electro 2020 is an interactive art installation that encourages participants to remix videos from political rallies, debates, and news in a structured sixteen beat loop.

The interface is comprised of 5 panels: PATTERN A [STEPS 1-16], PATTERN B [STEPS 17-32], TRIM & EFFECTS, VOCODER, and EFFECT GRAPHS.

The physical booth is a Diebold Accuvote TS case, a voting system that is difficult to audit and susceptible to hacking. An installation can be comprised of as few as one station or as many as eight.



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ABOUT THE PROJECT

Electo Electro 2020 is an interactive art installation combining audience participation, technology, music, news footage, and politics. iMacs running a custom Max MSP Jitter software patch are housed in voting booths that once held Diebold Accuvote TS voting computers. The patch makes it possible for participants to remix debate footage from the 2020 American presidential election cycle in a structured sixteen-beat loop that plays on the iMac screen and a set of speakers. Each station also utilizes an iPad as an interactive graphic user interface – a reference to musical devices such as the Roland TR 808.



Roland TR808

The touchscreen design of *Electo Electro 2020* is a parody of the touchscreen system employed by the Diebold Accuvote TS, a defunct voting system that was difficult to audit and susceptible to hacking. The parody continues into the format of the installation itself, which resembles a polling station. An installation can have as few as two stations or as many as ten. The format is an open one that allows anyone visiting the installation to interact with the stations. The project aspires to encourage those who interact with it to examine media and become individuals who can control media, rather than be controlled by it.



Diebold Accuvote TS

In 2003, a group of researchers discovered a long list of vulnerabilities in the Accuvote TS, including several hardware and software entry points resulting in opportunities to steal votes, lose votes, or render the machine itself unusable. The Diebold Accuvote TS system embodied a breakdown of the democratic process. It had no built-in auditing via paper. The computer used code that was owned by its parent company and can't be checked or audited. State-level voter databases associated with this voting system have seen serious security breaches. Its manufacturer has been embroiled in scandals including questionable affiliations between political officials and corporate executives. Government officials at the state level who supported the Diebold system's use have been involved in various lawsuits. Despite all these issues, this system was used as recently as 2018 in Georgia during its gubernatorial election.

Voting machines such as the Accuvote TS are DREs – Direct Recording Electronic systems. The flaws found in the Accuvote TS are not unique to that particular system. Many DRE systems are equally susceptible to similar security threats.

Sources and Further Reading:

Paul S. Herrnson et. al., *Voting Technology: The Not-So-Simple Act of Casting a Ballot*

Ariel J. Feldman, Alex Halderman, and Edward W. Felten, "Security Analysis of the Diebold AccuVote-TS Voting Machine"

Colorado Springs Gazette, "Common Cause, the National Election Defense Coalition and Protect Democracy Support Legal Challenge to Georgia's Insecure Voting System"

Bob Fitakis, "Diebold Indicted: Its spectre still haunts Ohio elections," *Columbus Free Press*

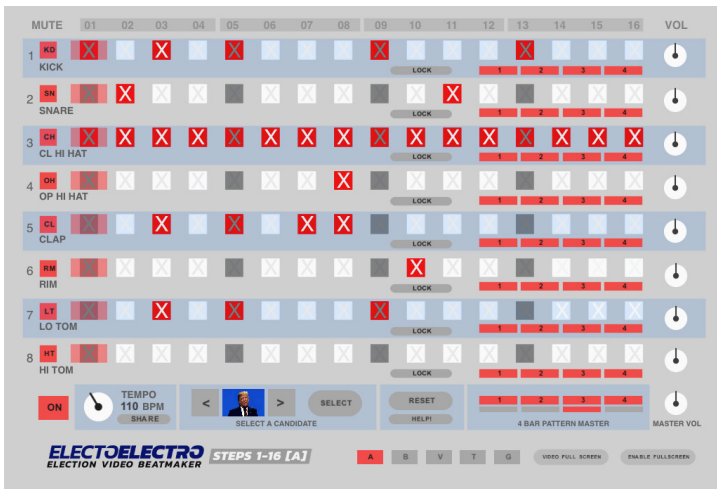
Colorado Springs Gazette, "Georgia voters, Colorado nonprofit sue to overturn special election results in Georgia's 6th Congressional District," *The Washington Examiner*

Acknowledgements:

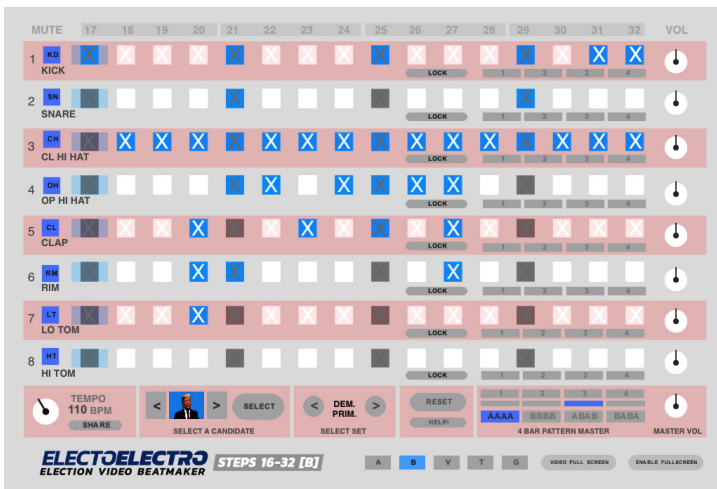
Monmouth University: the Provost's Office, the Department of Art and Design, the Deans' Department of the Wayne McMurray School of Humanities and Social Sciences, the Polling Institute, and Galleries and Collections. The work was supported in part by a Creativity Grant from Monmouth University.

PATTERN A [STEPS 1-16] & PATTERN B [STEPS 17-32] PANELS

OVERVIEW: You can program a 16-step percussive pattern with the PATTERN A (STEPS 1-16) and PATTERN B (STEPS 17-32) panels. These panels are broken down into 8 horizontal layers, each representing a different percussive sound such as a kick drum, high hat, snare, etc. You can also build A-B patterns with the 4-BAR PATTERN SELECTOR.

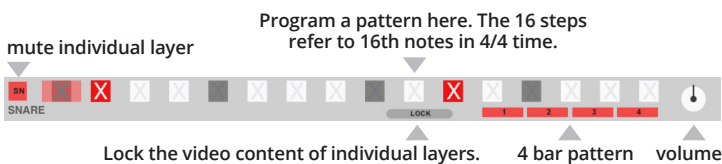


PATTERN A [STEPS 1-16]

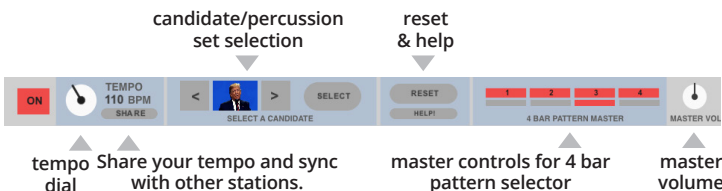


PATTERN B [STEPS 17-32]

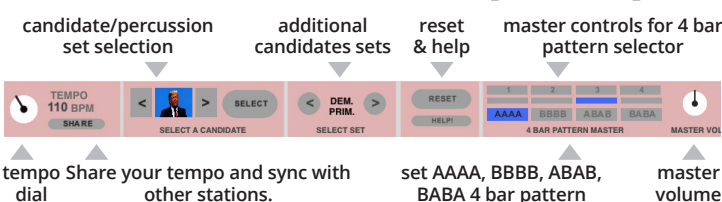
INDIVIDUAL LAYER CONTROLS ON PATTERN A & PATTERN B:



CONTROLS AT THE BOTTOM OF PATTERN A [STEPS 1-16]:

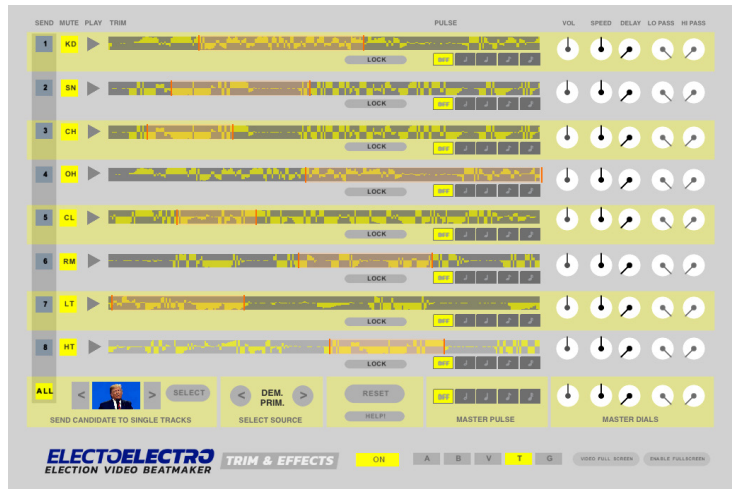


CONTROLS AT THE BOTTOM OF PATTERN B [STEPS 17-32]:



TRIM AND EFFECTS PANEL

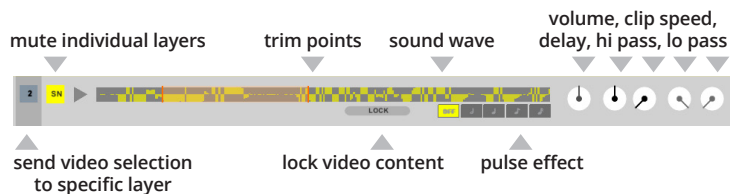
OVERVIEW: You can trim the video clip and adjust the dials for effects such as reverb/delay, clip speed, and both high and low pass filters. A PULSE EFFECT corresponding to whole, half, quarter, eighth, or sixteenth notes can be added to the audio clip. Both long and short videos can be trimmed. Trim the WAVEFORM by moving the orange TRIM POINTS.



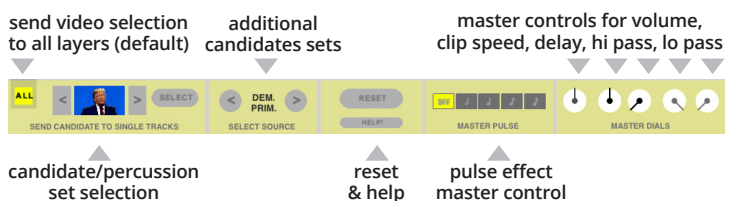
TRIM AND EFFECTS

INDIVIDUAL LAYER CONTROLS ON TRIM AND EFFECTS PANELS:

Refer to the yellow waveform image to help you trim clips. The orange lines and highlighted orange area designate the new edit points. Use SEND with the CANDIDATE SELECTION area to activate a specific percussive sound in a specific layer. For example, the default method is to activate a sound set from a single candidate in all layers. With the SEND feature in this panel, you can build a custom percussion set from multiple candidates. The PULSE EFFECT adds a staccato rhythm to the layer according to a whole, half, quarter, eighth, or sixteenth note beat.



CONTROLS AT THE BOTTOM OF TRIM & EFFECTS PANEL:



FEATURES COMMON TO MULTIPLE PANELS

PANEL NAVIGATION BAR



A = Pattern A | B = Pattern B | V = Vocoder | T = Trim & Effects | G = Effect Graphs

ON/OFF BUTTON



RESET BUTTONS: These buttons reset the effects for specific layers



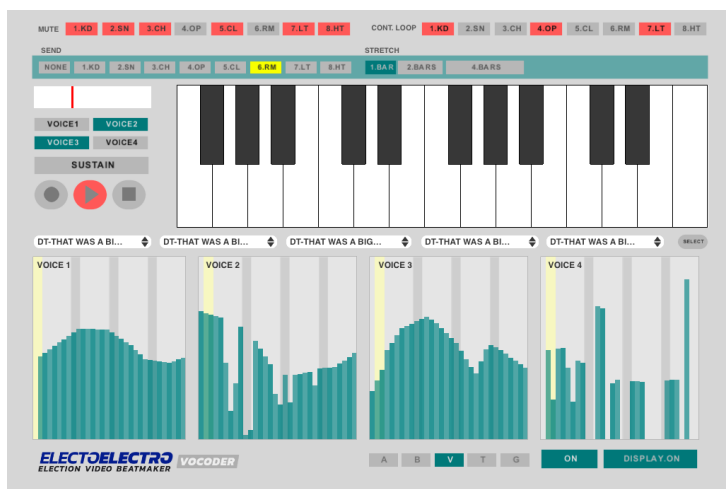
reset volume, delay, speed, high pass and low pass on specific layers

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VOCODER PANEL

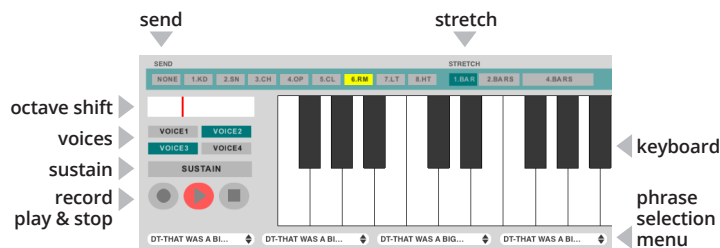
OVERVIEW: The VOCODER panel has a keyboard, layer mute controls, a SUSTAIN feature, and the ability to work with 1, 2, 3, or 4 keys or VOICES. You can record a melody with the keyboard or shape a melody with the GRAPH EDITORS. This melody can be stretched over 1, 2, or 4 bars. Select longer phrases with the PHRASE SELECTION MENU.



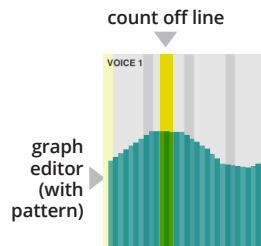
VOCODER

PHRASE SELECTION, SEND, STRETCH, VOICES, SUSTAIN, RECORD:

Select a longer audio/video clip with a pop up menu. *Hold* the RECORD button while pressing a series of keys to record a melody. *Tap* the play button to play your recorded melody. The VOICE buttons enables 1, 2, 3, or 4 keys. If SUSTAIN is activated, the tone will continue when you take your fingers off the keyboard. Deactivate SUSTAIN if you want the tone to stop when you stop touching the keyboard. SEND will apply the melody or tone to 1 layer at a time. STRETCH will stretch your melody over 1, 2, or 4 bars. The OCTAVE SLIDER will shift the keyboard higher and lower.



VOCODER GRAPH EDITORS: Instead of recording a keyed melody on the keyboard. You can draw a melody in the GRAPH EDITORS. Playback is activated with the PLAY button. It will run more slowly if STRETCH is set to 2 or 4 bars. There are 4 editors. Each is activated with the VOICE button. The COUNT OFF LINE displays the timing of the sequence.



MUTE AND CONTINUOUS LOOPING BUTTONS: Turn off the audio for individual layers with the MUTE buttons. The CONTINUOUS LOOPING feature repeats the clip rapidly—best for when you need a steady tone. Use the CONTINUOUS LOOPING feature with the trim panel for best results.

mute buttons for individual layers

continuous looping



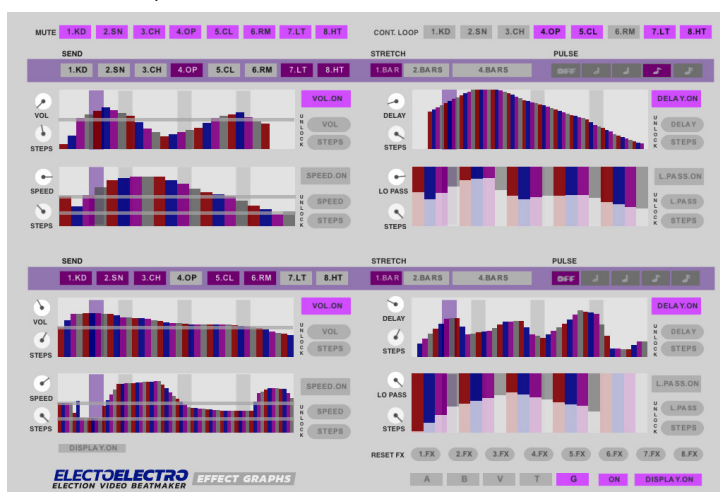
DISPLAY ON BUTTON: At times, the COUNT OFF LINE will affect performance. Turn the COUNT OFF LINE on and off with the DISPLAY ON button at the lower right of the VOCODER panel.



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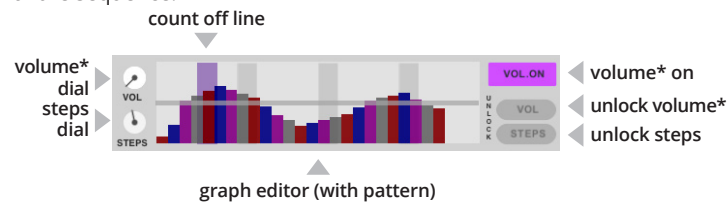
EFFECT GRAPHS PANEL

OVERVIEW: EFFECT GRAPHS applies timed effects to the VOLUME, DELAY, CLIP SPEED, AND LO PASS DIALS. These patterns will affect the layers selected in the SEND buttons. The pattern can be stretched over 1, 2, or 4 bars. Draw a pattern in the EFFECT GRAPH EDITOR or capture real time manipulation with the VOLUME DIAL and UNLOCK VOLUME.



EFFECT GRAPHS

EFFECT GRAPH EDITORS: Draw a pattern in the EFFECT GRAPH EDITORS to created timed changes in volume, speed, delay, or the low pass filter. The VOLUME ON, SPEED ON, DELAY ON, LO PASS ON buttons will activate the corresponding pattern. You can also capture a pattern in real time by *holding* the UNLOCK VOLUME, UNLOCK SPEED, UNLOCK LO PASS, OR UNLOCK DELAY buttons and manipulate the VOLUME, SPEED, DELAY, OR LO PASS DIALS to If you wish to increase the number of steps of the graph, *hold* the UNLOCK STEPS button and manipulate the STEPS DIAL. The COUNT OFF LINE displays the timing of the sequence.



*these dials and buttons will correspond to speed, delay, and low pass in the other effect graphs

SEND, STRETCH, PULSE: SEND will apply the pattern to multiple layers simultaneously. STRETCH will stretch your pattern over 1, 2, or 4 bars. The PULSE EFFECT corresponding to whole, half, quarter, eighth, or sixteenth notes can also be added.



MUTE AND CONTINUOUS LOOPING BUTTONS: Turn off the audio for individual layers with the MUTE buttons. The CONTINUOUS LOOPING feature repeats the clip rapidly—best for when you need a steady tone. Use the CONTINUOUS LOOPING feature with the trim panel for best results.

mute buttons for individual layers

continuous looping



DISPLAY ON BUTTON: At times, the COUNT OFF LINE will affect performance. Turn the COUNT OFF LINE on and off with the DISPLAY ON button at the lower right of the EFFECT GRAPHS panel.



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