

ONLY
FOR

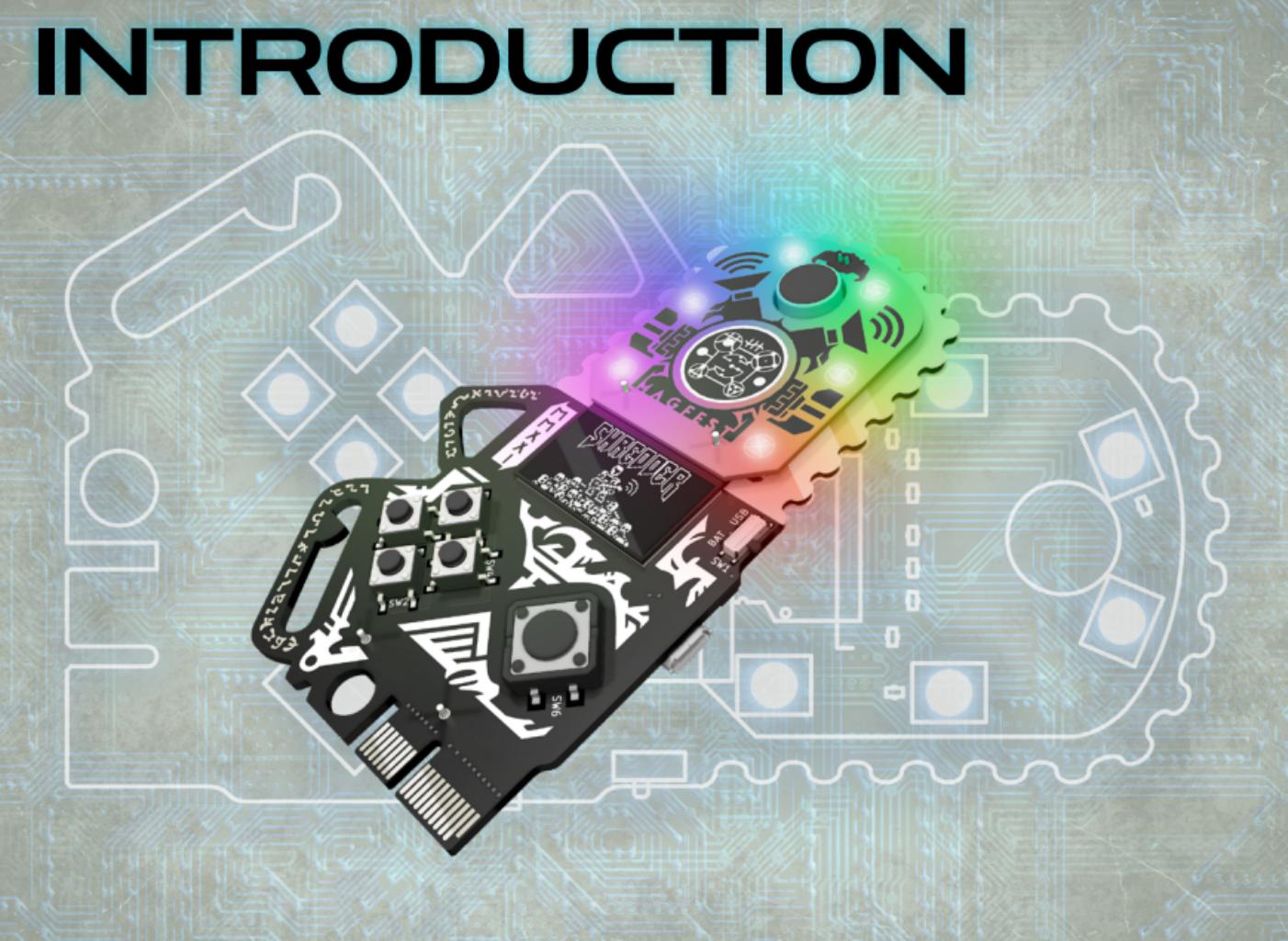
MAGFEST ADVANCE

SURGE



MAGFest.org

INTRODUCTION



MEET YOUR SWADGE

This Chainsaw Swadge is coming at you straight from the depths of... the collective effort of everyone on the Swadge team. It's got five satisfyingly clicky buttons. It's got a super crisp 8K OLED display (that's $128\text{px} * 64\text{px}$, for 8192px total). It's got a microphone that we swear isn't spying on you. It's got six hidden LEDs. It's got a METAL chain on the saw, yet it's safe and smooth. It's covered in runes that may or may not summon demonic entities to the mortal plane. It's powered by two Life Cells (aka AA batteries) or a direct Electron Stream (aka Micro USB). And best of all, it has secretsssss.



POWERING YOUR SWADGE

Your Swadge has a switch between Life Cell and Electron Stream power sources. When not in use, maximize your Life Cells by switching your Swadge off. When your battery drain hits a specific level, your Swadge will go into 'blood-thirst' mode, in which the LED array will only display the color red. Your damage multiplier goes to 2x during this period, however your Swadge's lifespan will begin a rapid internal countdown, eventually exhausting the last of its precious resources (usually around hour 30 of constant use). You'll need to acquire two new Life Cells in order to recharge your Swadge to let loose your demonic rampaging once again.

Attacking other attendees will not cause them to drop Life Cells. Please do not attempt.

OFFICIAL SWADGE ACCESSORIES

The Rip and Wear merch tier also comes with a Swadge Dock. The Dock can be used to stylishly display and power your Swadge, no need for Life Cells. If you're feeling adventurous, the Dock can also be used to reprogram your Swadge. You can find a Getting Started Guide and all the source code on GitHub.

Questions? Comments? Concerns? Want to work with us next year? Email us at circuitboards@magfest.org!

FIRMWARE REPO

<https://github.com/AEFeinstein/Super-2022-Swadge-FW>

HARDWARE REPO

<https://github.com/AEFeinstein/Super-2022-Swadge-HW>

MAIN MENU

The menu is where you start, and if you think it's boring, you couldn't be more wrong.

USING THE MENU

The left and right buttons will astonishingly cycle between the astounding modes and display full frame images for each.

LED LIGHT DANCES

If you show a little patience, the LEDs will come to life displaying one of 24 different patterns. If you wait just a little bit more, the LEDs will brighten up. If you're unsatisfied with your LED pattern (but you won't be), the up and down buttons will cycle through all the options.

SCREENSAVERS

When the LEDs get bright, the OLED will also switch to screensaver mode, showing one of four deliciously nostalgic screensavers. If you aren't appreciating all the hard work that went into a particular screensaver, the left and right buttons will cycle to another one. Pressing the action button will bring you back to mode selection.

You may notice that the connector on the bottom of the Swadge looks a lot like a PCI Express x1 connector. In fact, plugging the Swadge into a PCIe slot on a computer will severely damage both the Swadge and the computer! Don't do it. Seriously, we warned you. But if you do anyway, at least put the results on Twitter and tag us with @MAGFest.



Blast your way through an endless army of evil space aliens with your experimental M-Type fighter!

STARTING THE GAME

First pick your difficulty from Gentle to Nightmare. The difficulty controls the number of enemies you'll face, the scarcity of power-ups, and your score multiplier!

CONTROLS

The Directional Buttons move your fighter up, down, left, and right. Pressing or holding down the Action Button fires your weapons. If you release the Action Button while your Reflect gauge is full, you will put up your Reflect shield until the Reflect gauge is empty. The Reflect gauge charges whenever you aren't firing.

PLAYING THE GAME

Your M-Type fighter is equipped with two powerful abilities: a Reflect shield generator, and a Power-up absorber. When you use the Reflect shield, your ship is invincible; You will destroy any enemies you touch, and any enemy projectiles that hit your Reflect shield will be bounced back at your foes! Enemies can drop Power-ups when defeated; You can absorb Power-ups to upgrade your firepower, increase your speed, or refill your Reflect gauge. The enemies will attack you in endless waves, hold out for as long as you can to get the highest score!

HIGH SCORES

You can check your high scores from the menu. When you're checking out your high scores use the left and right buttons to change the difficulty. Pressing the Action Button will exit the high scores.

If you're fully powered-up, collecting a power-up will refill your Reflect gauge to full, even if you're using Reflect!



I GOT THE
HIGH SCORE!

STOMP



The flying skulls are coming to get you and the only way to stop them is to Stomp them into the ground!

STARTING THE GAME

First pick your difficulty from Gentle to Nightmare. As the difficulty gets harder, there will be more skulls and they'll be coming faster.

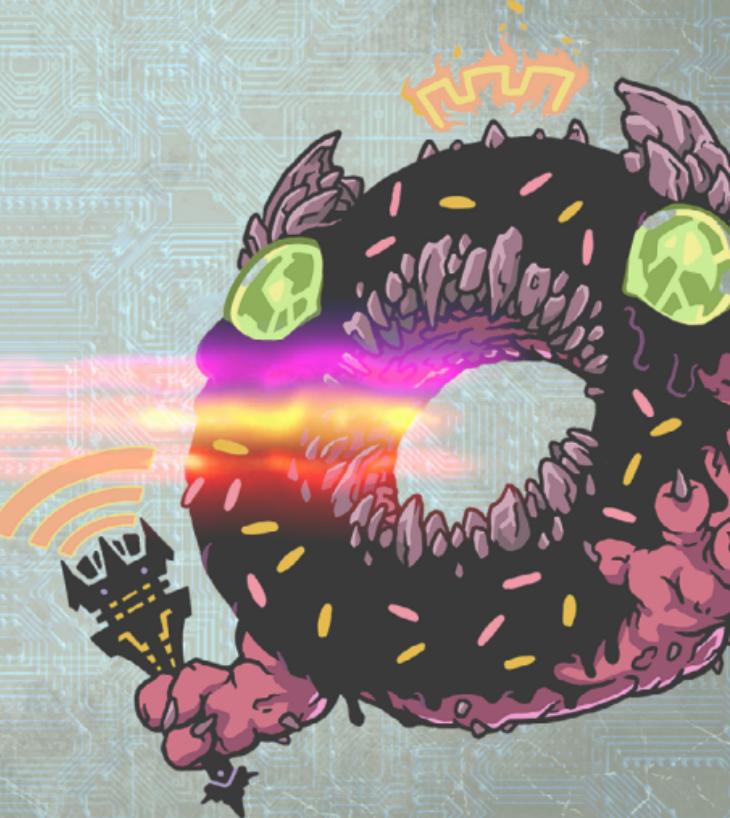
STOMPING

When the skulls reach the target, press the button in the direction they're facing. The LEDs will beat in time with the skulls. The display will tell you if your timing is perfect, early, or late. When you Stomp skulls, your meter on the right will fill up. If you miss skulls or Stomp on nothing, then your meter will deplete. If your meter hits zero, you lose.

HIGH SCORES

Try to get the biggest combo with the most perfects as possible! When you're checking out your high scores use the left and right buttons to change the difficulty. Pressing the Action Button will exit the high scores.

*Rotate your Swadge 90° counterclockwise
for a more traditional experience!*



SHREDDER



Hate'th Notes have taken over the arenas, and it's up to you to Shred them to pieces! Wield your righteous guitar and get them before they get you with their scythes!

STARTING THE GAME

First pick your difficulty from Gentle to Nightmare. As the difficulty gets harder, there will be more Hate'th Notes, they will have more health, and both you and they will move faster. Then pick the arena size from small to large. The map is displayed on the screen, so study it well.

HEADS-UP DISPLAY

In the game, the number of remaining Hate'th Notes are displayed in the bottom left corner and your health is displayed in the bottom right corner.

MOVEMENT

In the arena, use the left and right buttons to turn left and right and the up and down buttons to move forward and back. You can double tap the left or right buttons to strafe.

ACTION

The Action Button will Shred and fire bolts out of your guitar. The bolts will do less damage at longer distances. If you're really close you'll kick the note in the face instead and regain a little health.



LEDS

The LEDs are your radar, so pay close attention. If a Hate'th Note is in range, the LEDs will light up in the direction of the nearest one. When the LEDs flash yellow, you're under attack. You can strafe to dodge the incoming attack. The LEDs flash red when a Hate'th Note Shreds you. The LEDs flash green when you Shred a Hate'th Note or rainbow when you kick one in the face. If your health drops to a quarter of what you started with, the LEDs will pulse red. Watch out!

HIGH SCORES

Try to clear out all the Hate'th Notes as fast as possible! When you're checking out your high scores use the left and right buttons to change the difficulty and use the up and down buttons to change the arena size. Pressing the Action Button will exit the high scores.

Hate'th Notes are faster than Quarter Notes but slower than Sixteenth Notes.

Also, Shredder is rendered using a raycasting technique, which is basically the same as what a top end NVIDIA GeForce RTX 3090 does.





PERSONAL DEMON

We all have our own Personal Demons, and now you can take care of yours!

STARTING OUT

After your demon emerges from the demonic portal, it's up to you to care of it for as long as you can. Your demon's health is displayed as a column of hearts on the right side. Each turn you can perform one action. The turn count is displayed in the top right corner.

FEED

Give some food to your demon. A fed demon is a happy demon! If a demon is sick or unruly, it may not eat its food. Sometimes a demon will get gluttonous and eat more than it should. If a demon ate too much or didn't eat enough, it might get sick.

PLAY

Play a game of catch with your demon. Playing makes your demon happier. Sad demons can get unruly. If a demon is unruly, they may not want to play.

SCOLD

Scold your demon. Scolding your demon will make it less unruly, but also a little less happy. Scolding a demon for being sick won't help at all.



MEDS

Give your demon some medicine. This has a pretty good chance of healing a sick demon, but won't do anything if your demon is already healthy. Taking medicine makes your demon a little sad, but it's good for them: sick demons lose health.

FLUSH

Flush the poop. If your demon is eating, then your demon is also pooping. Make sure to flush the poop before it makes your demon sick!

SPIN

Spin the Wheel of Misfortune. You could win a magic chalice, your demon could regain some health, it could lose a little health, or it could become unruly and sad.

DRINK CHALICE

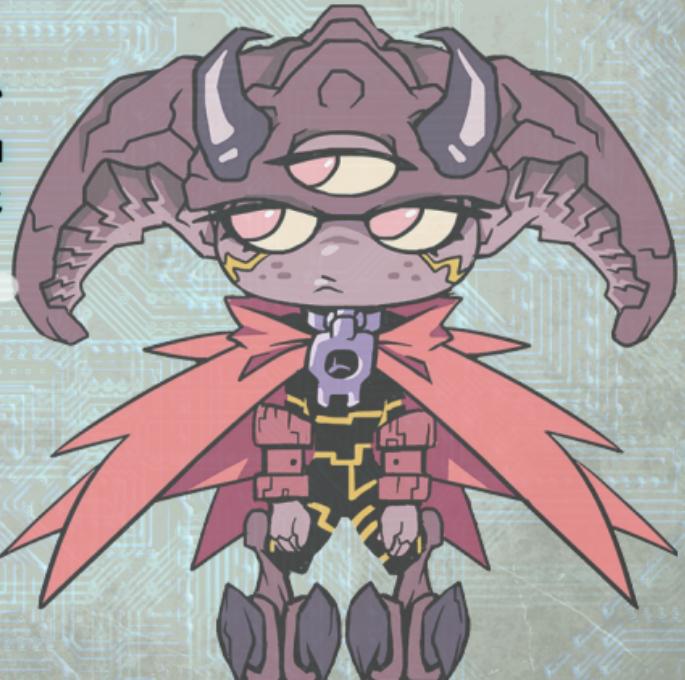
You can only drink from the magic chalice after winning it at the Wheel of Misfortune. The chalice will make hungry demons full, stuffed demons less full, and heal all sickness.

KILL

If you want to start over with a new demon, you can kill your current one. But you wouldn't do that, would you? You're the real monster here.

KILL...

Personal Demons have personalities, and sometimes they aren't very good.



STATUSES



Your demon is extra happy, yay!



Your demon is sad, boo.



Your demon is unruly. Uh oh.



Your demon is sick. Poor thing.

RECORDS

You can view your records for the longest lived demons. Click any button to exit the records.



All the tools you need to tune an instrument and play music, as long as you only need a tuner and metronome!

THE TUNER

The first screen you'll see upon entering Tunernome is the instrument tuner. By default, this is set to tune a 6-string acoustic guitar in standard tuning (that is, from lowest to highest string: E, A, D, G, B, and E).

HOW TO TUNE

The notes on the screen correspond to the strings of the guitar, starting from the lowest string at the bottom left and moving clockwise to the highest string. Their positions are matched to the positions of the LEDs, which will light up blue if the associated note is flat, red if the note is sharp, and white if the note is in tune.

TUNER CONTROLS

Pressing the Action Button will change the microphone's gain (sensitivity). One is the least sensitive and nine is the most sensitive.

The up and down buttons will cycle through the tuner modes.

MULTI-STRING

For the acoustic guitar, violin, and ukulele modes, you can opt to tune a single string on your instrument at a time, or multiple strings simultaneously—even all of them at once!

TUNER MODES

- 6-string acoustic guitar in standard tuning (E, A, D, G, B, and E)
- 4-string violin in standard tuning (G, D, A, and E)
- 4-string ukulele in standard, reentrant tuning (A, E, C, and G)
Not a "ukelele" as the screen would suggest. I have no idea what that is.
- 12-semitone single-note chromatic tuner that starts on C (at any octave)
You can shift the target note upward by one semitone with each press of the up button.
- A single-note mode where the tuner automatically identifies and displays the most dominant note being played
In single-note mode, the LEDs will flash a color corresponding to the note.

THE METRONOME

Tunerome also helps you keep an accurate tempo and look awesome doing it! The metronome can be accessed from the tuner at any time by pressing the right button. This will display the current tempo in BPM (beats per minute) along with a time signature. Every LED flash indicates a single beat (quarter note), with each green LED flash indicating the first beat of each new measure.



THE SECRET TO THE GROOVE
IS GOOD RHYTHM, MAN.

METRONOME CONTROLS

Pressing the up or down buttons will change BPM, and holding them will change BPM faster. The Action Button will change the measure length in beats, with the default being 4 beats per measure (that is, 4/4).

The metronome's tempo range goes up to 400 BPM, in case the Swadge is traveling at a significant fraction of the speed of light and you are not... or if

you're a seasoned bebop, drum-and-bass, or metal musician! It can also go as low as 1 BPM if you want to keep track of how often Apple makes \$180,175 in profit (as of December 2021).

**HEY WHAT THE HELL
YOU CAN'T BE HERE!**





Fly through a reimagining of the Gaylord atrium by Greg Lord. Collect as many beans as possible with your Bean Blaster and go through all of the donuts!

YOUR GOAL

You must go through all donuts and through the gazebo at the end to complete the course. Compete for times in both 100% Bean Blitz and Any% Speedrun.

CONTROLS

Use the up, down, left, and right buttons to pilot the Bean Blaster. The Bean Blaster is a high-energy ship, so it's always moving forward. Pressing the action button will push it even faster, at the cost of maneuverability. If you don't like the way it's handling, you can invert the Y axis from the main menu.

Follow the flashing targets and learn the course. Your Bean Blaster thinks it's gotta go fast. But until you get some flight experience, keep your speed down and learn the turns.



ColorChord is back and ready to flash along to your choicest beats! It even visualizes the spectrum for you.

CONTROLS

Left: Adjust the microphone's gain (sensitivity). One is the least sensitive and nine is the most sensitive.

Right: Switch LED mode between solid and rainbow.

Down: Hold to exit to the main menu.

LED MODES

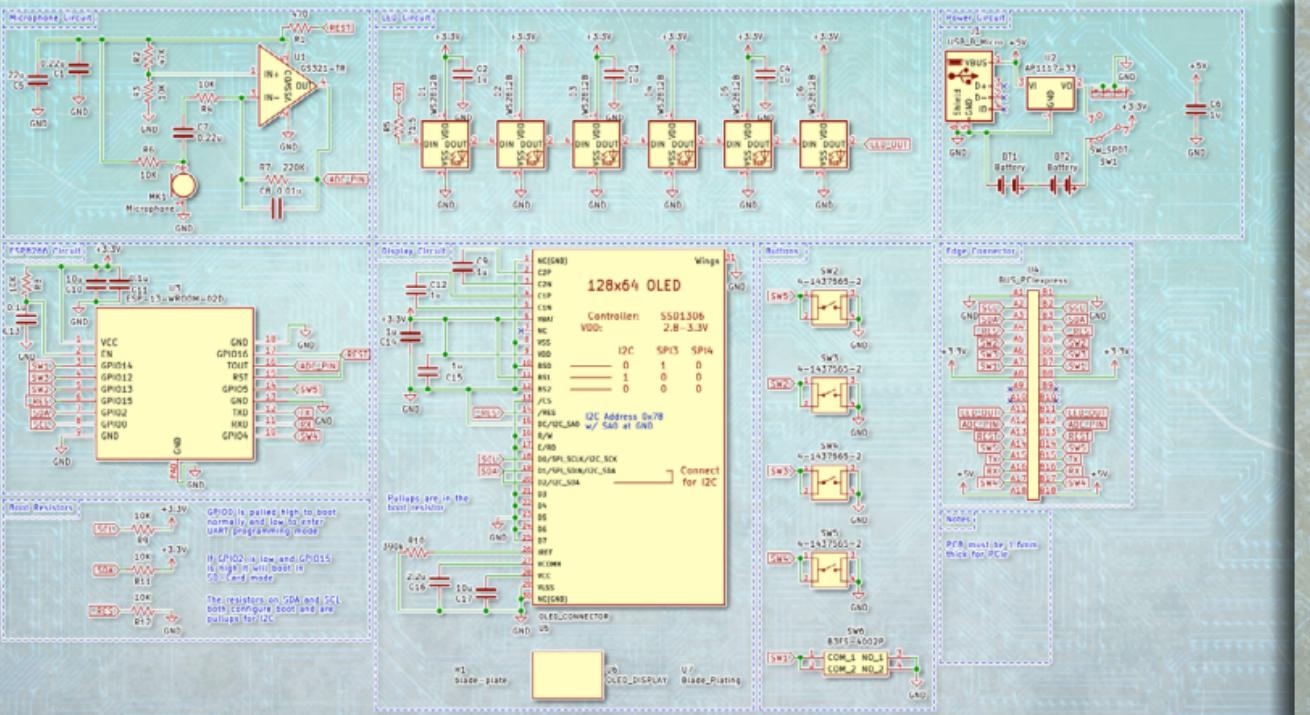
In solid mode, all the LEDs will be the same color of the most dominant frequency. In rainbow mode the LEDs will be different colors for the different frequencies detected.

The colors selected are the same in every octave. For example, a C is the same color whether it be middle or high C.

Visit <https://github.com/cnloehr/colorchord> for more *ColorChord* goodness!

SCHEMATIC

*Modifying your Swadge will not void the warranty.
This is because it doesn't have one.*



```
const char* creditNames[] = {
    "Adam Feinstein",
    "ArsenioDev",
    "Bryce Browner",
    "cnlohr",
    "Dac",
    "Dr. Kelley",
    "Emma Atlas",
    "Greg Lord",
    "Hex",
    "Jonathan Moriarty",
    "Justin Wood",
    "Kevin 'PF3k' Lin",
    "Les Farkas",
    "Rick W Van Tassel",
    "Socks Magocs",
    "Thaeli",
    "Yokaiy"
};
```





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