NGW E-Ink Workshop

Never Graduate Week!
May 9, 2022

Maryanne Wachter and
Shae Errison

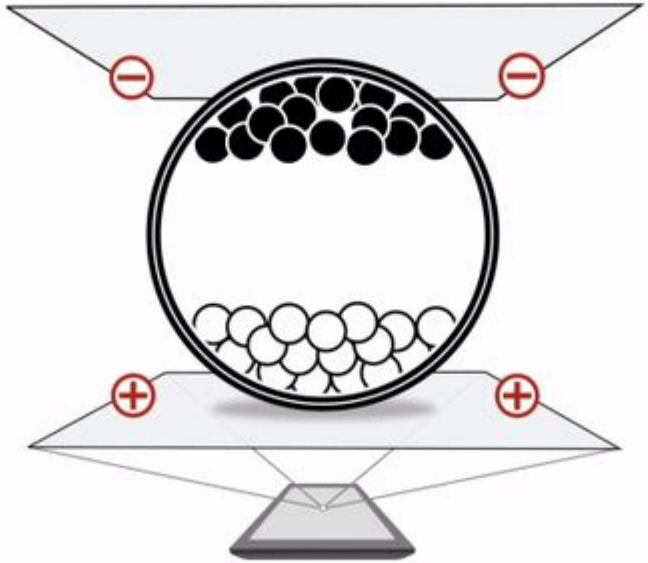
What We're Going to Do!

- Talk about e-ink (and why it's cool)!
- Work with CircuitPython
- Go through template code - push calendar events from a flask app to the MagTag
- Customize our displays! (time permitting)

A (Brief) History of E-Ink

- Developed in 1997 at the MIT Media Lab
- First patent filed in 1996 (almost all patents exclusively held by E Ink Corporation at this point)
- Uses changes in electric charges to move pigments from top to bottom of transparent microcapsules
- Originally black and white, currently available with up to 32,000 colors (Advanced Color ePaper)

Different E-Ink Systems



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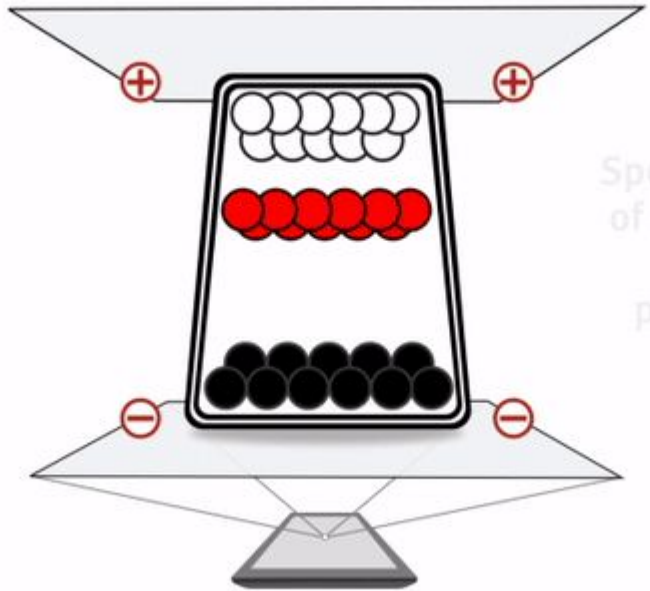

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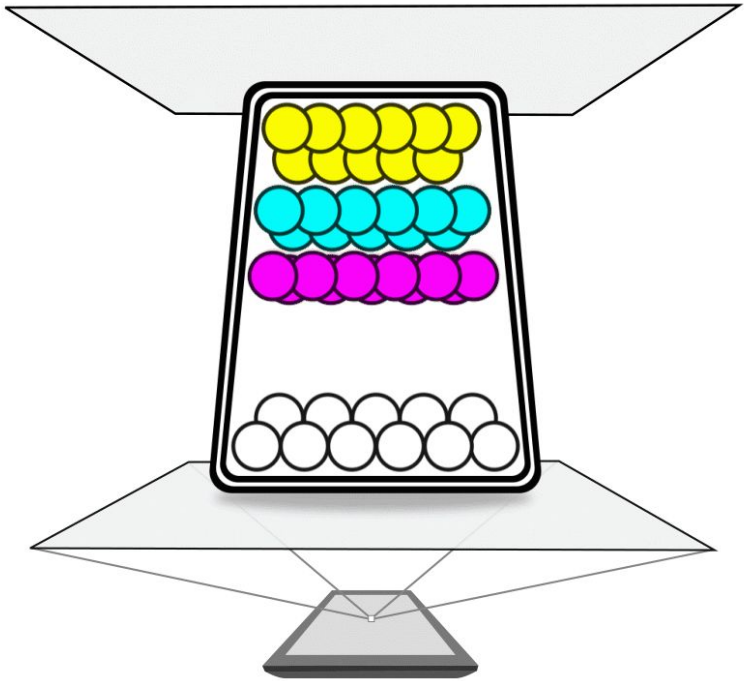


State of the Art - Flexible Displays

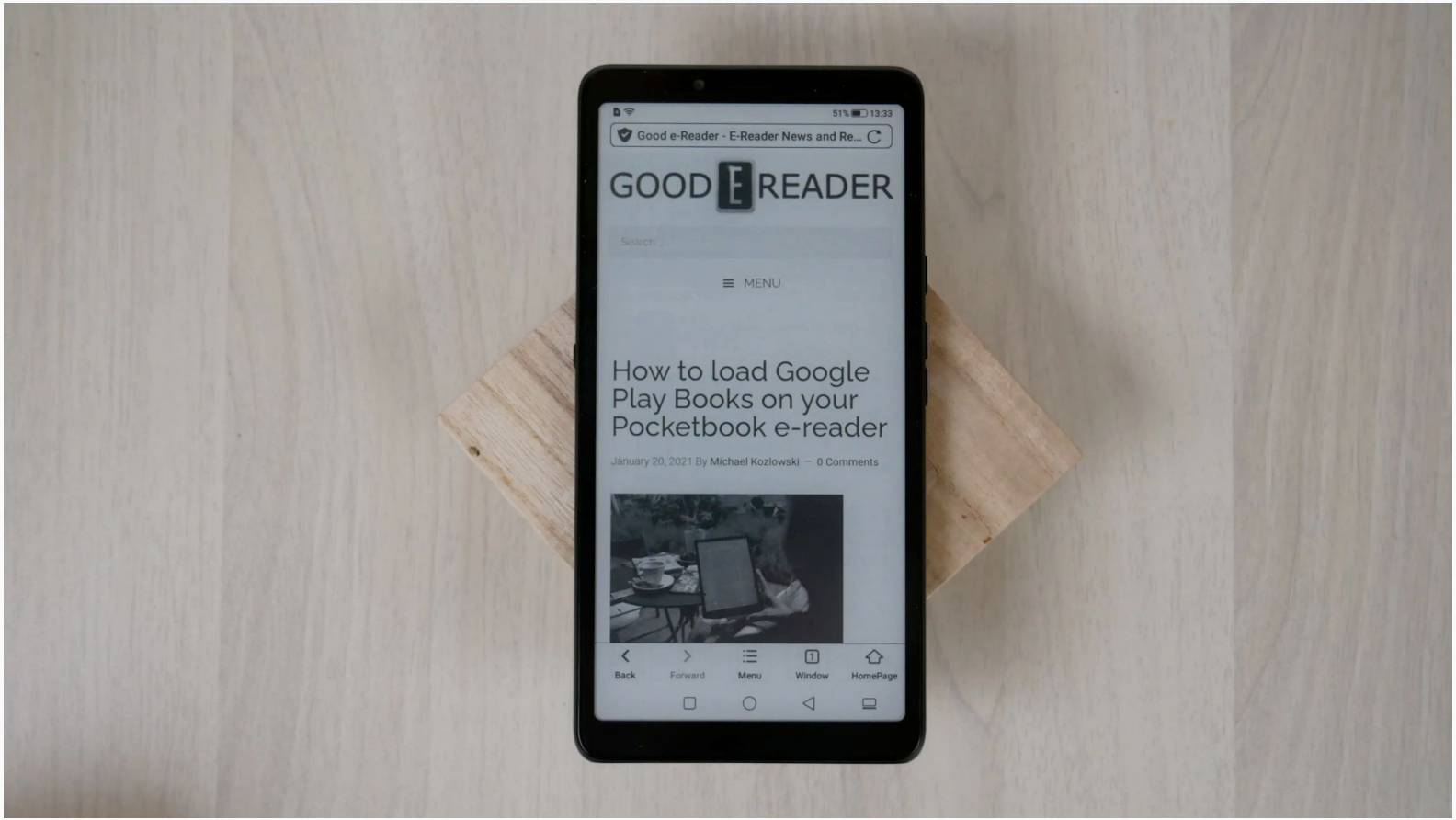
https://www.youtube.com/watch?v=5qOSGyrIgMo

State of the Art - 31.2" color ePaper Display - $2300

Dasung E-Ink Monitor - Paperlike $1000 - $1100

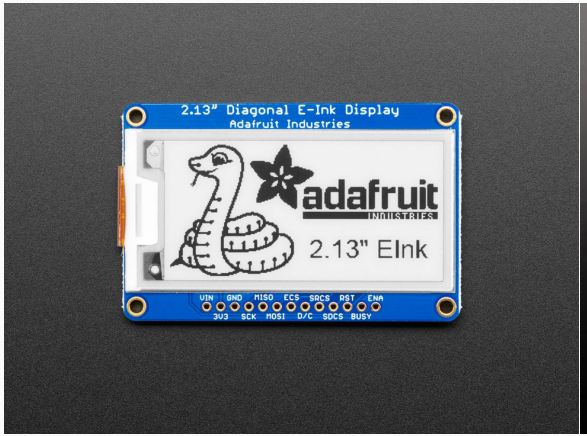
https://www.youtube.com/watch?v=vnUACe8Bsyg

Hisense Phone (not available in U.S., new one coming May 11!)



What you can get: Pimoroni

What you can get: Adafruit



E Ink Communities

- EI2030
- Reddit

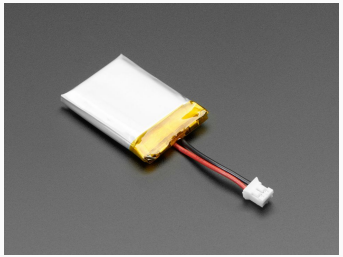
Materials

(https://github.com/m-clare/NGW_E_Ink_Workshop/Workshop_2022)

- MagTag

- USB - C Cable

- Optional power supply / battery



MagTag Features!

- 4 RBG NeoPixels
- 4 buttons (can make different modes)
- Triple-axis accelerometer
- Speaker/Buzzer
- Front facing light sensor
- STEMMA QT Port
- STEMMA 3 pin JST connectors
- On/Off switch
- Boot and Reset buttons

Connecting to your MagTag

Initial Steps:

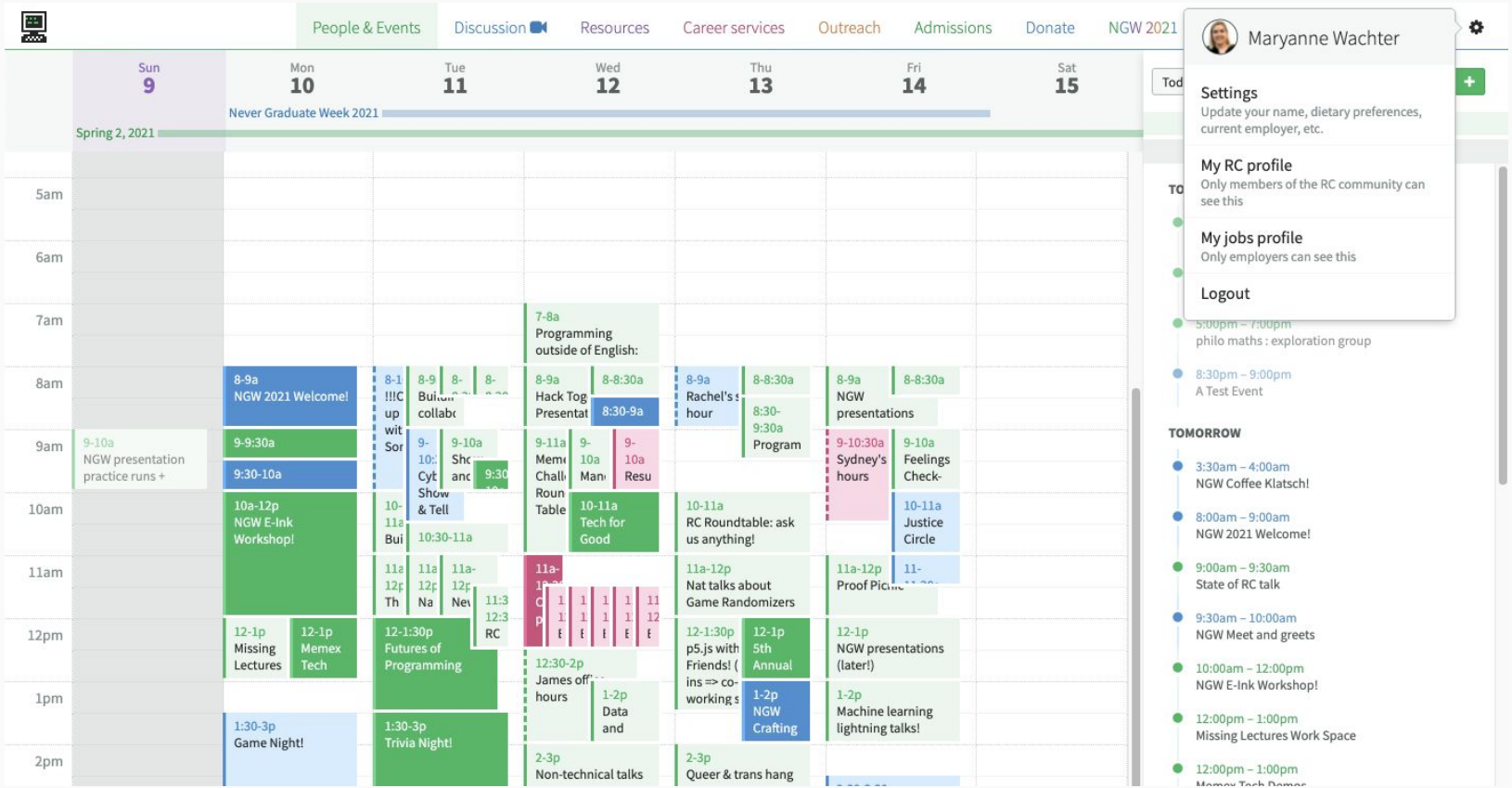
- Download current version of CircuitPython (v7.2.5 stable version)
  - https://circuitpython.org/board/adafruit_magtag_2.9_grayscale/
- Download .uf2 instead of .bin
- Click *PAUSE* Click RESET button - MAGTAGBOOT should show up in devices

Connecting to your MagTag

Initial Steps:

- Drag and drop .uf2 file
- You may get `MpyError: Incompatible .mpy file.`
  - `https://learn.adafruit.com/magtag-google-calendar-event-display/circuitpython-internet-test`
- Replace code.py and secrets.py with the ones from the repo
  - https://github.com/m-clare/NGW_E_Ink_Workshop/tree/main/Workshop_2022
- Replace lib folder with files from unzipped CircuitPython file (only those listed)

Your Calendar Token



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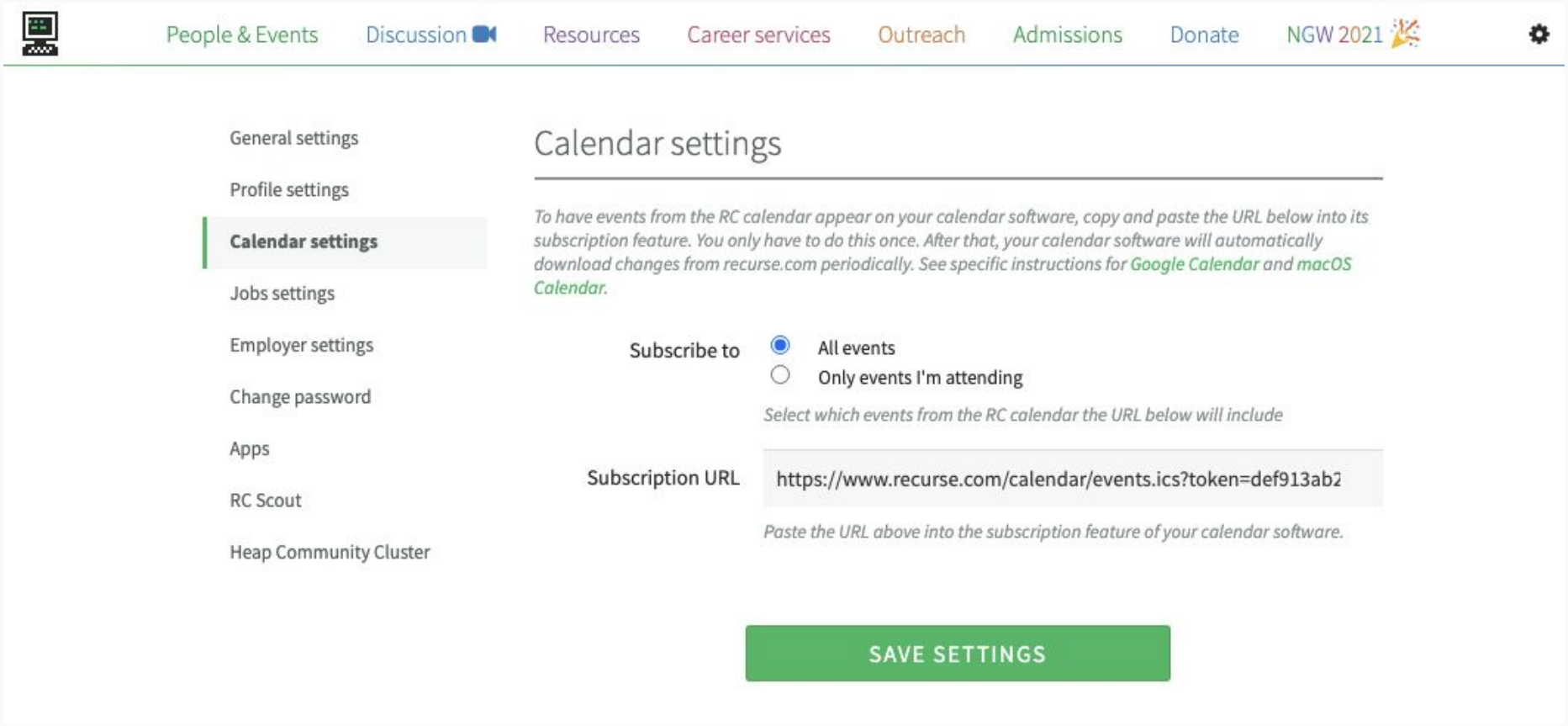

Making Images

https://learn.adafruit.com/preparing-graphics-for-e-ink-displays

https://learn.adafruit.com/magtag-slideshow