

# NGW E-Ink Workshop

Never Graduate Week!  
May 9, 2022

Maryanne Wachter and  
Shae Errison

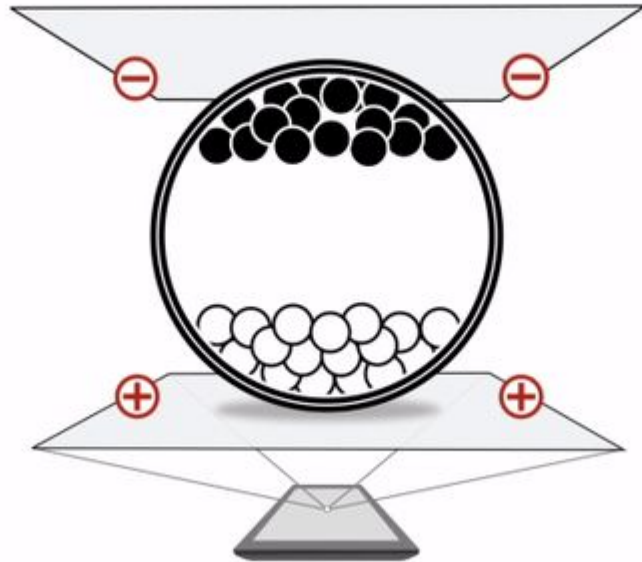
# What We're Going to Do!

- 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)

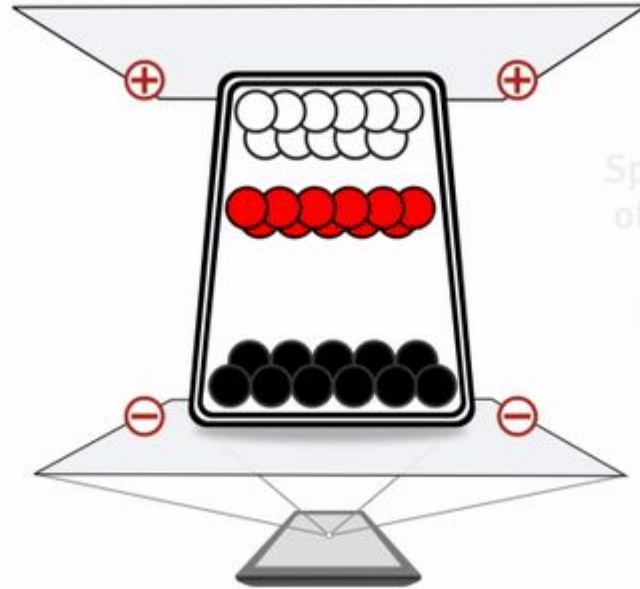
# A (Brief) History of E-Ink

- 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

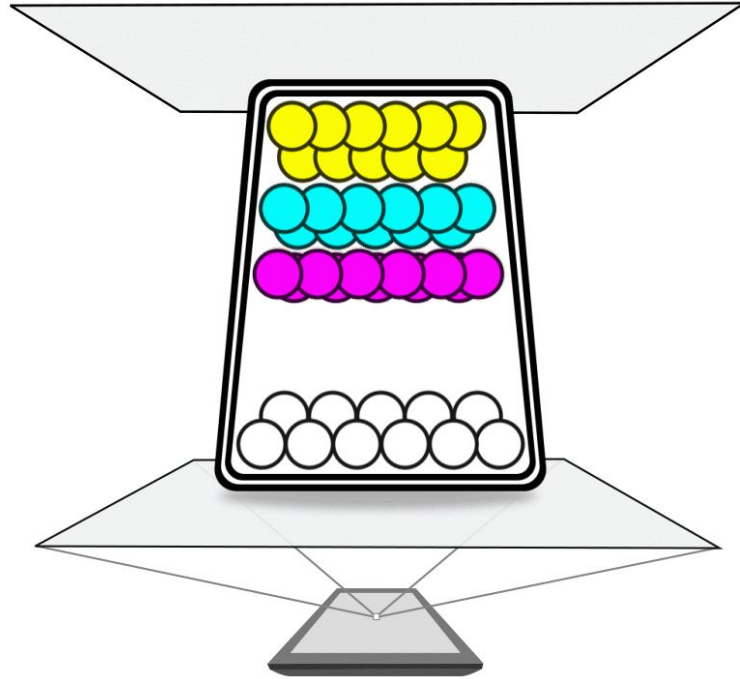


## Different E-Ink Systems

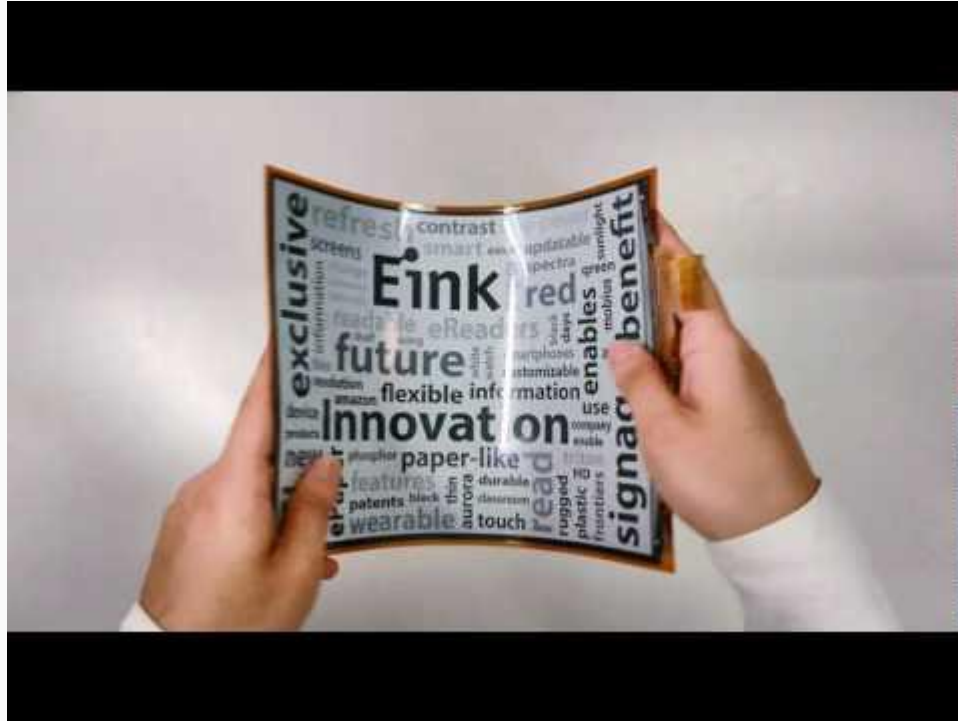


Spectra displays are made  
of millions of Microcaps<sup>®</sup>  
which suspend the  
pigments in clear fluid

# Different E-Ink Systems



# State of the Art - Flexible Displays



<https://www.youtube.com/watch?v=5qOSGyrlgMo>

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

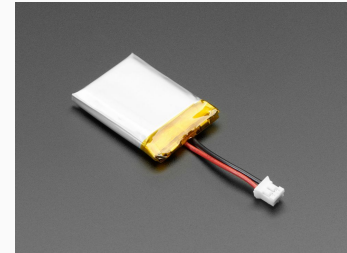
- MagTag



- 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/](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](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



People & EventsDiscussionResourcesCareer servicesOutreachAdmissionsDonateNGW 2021

Sun 9

Mon 10

Tue 11

Wed 12

Thu 13


Fri 14

Sat 15

Never Graduate Week 2021

Spring 2, 2021

5am						
6am						
7am			7-8a Programming outside of English:			
8am	8-9a NGW 2021 Welcome!	8-11a Bul... collab	8-9a Hack Tog Presentat	8-8:30a 8:30-9a	8-9a Rachel's hour	8-8:30a 8:30-9:30a Program
9am	9-10a NGW presentation practice runs +	9-9:30a 9:30-10a	9-11a Mem Chall Roun Table	9-10a 10a 10a Resu	9-10:30a Sydney's hours	9-10a Feelings Check-
10am	10a-12p NGW E-ink Workshop!	10-11a Bui	10-11a Tech for Good	10-11a RC Roundtable: ask us anything!	10-11a Justice Circle	
11am		11a-12p Th Na Nev	11a-12p Nat talks about Game Randomizers	11a-12p Nat talks about Game Randomizers	11a-12p Proof Picme	
12pm	12-1p Missing Lectures	12-1p Memex Tech	12-1:30p Futures of Programming	12-1:30p p5.js with Friends! (ins => co- workings	12-1p 5th Annual	12-1p NGW presentations (later!)
1pm	1:30-3p Game Night!	1:30-3p Trivia Night!	1:30-2p James off- hours	1-2p Data and	1-2p NGW Crafting	1-2p Machine learning lightning talks!
2pm			2-3p Non-technical talks	2-3p Queer & trans hang		



Maryanne Wachter

Settings  
Update your name, dietary preferences,  
current employer, etc.

My RC profile  
Only members of the RC community can  
see this

My jobs profile  
Only employers can see this

Logout

5:00pm - 7:00pm  
philo maths : exploration group

8:30pm - 9:00pm  
A Test Event

TOMORROW

3:30am - 4:00am  
NGW Coffee Klatschl!

8:00am - 9:00am  
NGW 2021 Welcome!

9:00am - 9:30am  
State of RC talk

9:30am - 10:00am  
NGW Meet and greets

10:00am - 12:00pm  
NGW E-ink Workshop!

12:00pm - 1:00pm  
Missing Lectures Work Space

12:00pm - 1:00pm  
Missing Lectures Work Space

[General settings](#)[Profile settings](#)**[Calendar settings](#)**[Jobs settings](#)[Employer settings](#)[Change password](#)[Apps](#)[RC Scout](#)[Heap Community Cluster](#)

## Calendar settings

*To have events from the RC calendar appear on your calendar software, copy and paste the URL below into its subscription feature. You only have to do this once. After that, your calendar software will automatically download changes from [recurse.com](#) periodically. See specific instructions for [Google Calendar](#) and [macOS Calendar](#).*

Subscribe to



All events



Only events I'm attending

*Select which events from the RC calendar the URL below will include*

Subscription URL

<https://www.recurse.com/calendar/events.ics?token=def913ab2>

*Paste the URL above into the subscription feature of your calendar software.*

**SAVE SETTINGS**

# Making Images

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

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