**Drone Flight Instructions**

Note: Fly around noon if possible

**Before heading to field:**

1. Check ***UAV Forecast*** phone application to ensure a safe flight and screenshot conditions and paste in drive daily task sheet under drone flight task
2. Ensure at least 2 batteries and the control remote are fully charged by pressing the power button once
3. Grab drone, batteries and microSD (Sara’s office) and all 16 color calibration panels (basement room)

**Field Setup:**

1. Carefully set up color calibration panels around field in order following [map](https://drive.google.com/file/d/1NkF6wB4VrxSXufuIe4t5V_ULdErt323j/view?usp=sharing)

**Drone Setup:**

1. Put propellers on drone (match silver and dark grey dots on drone with ring color in center of propeller)
2. Insert microSD card
3. Insert drone battery - circular power button facing the right; barcode in back facing upwards
4. Remove gimbal clip and foam holding camera in place during storage
5. Connect phone to controller using USB cable
6. Turn on controller first and then drone by pressing button once and then pressing one more time and holding it until on
7. Place drone in desired takeout/landing position (front lefthand side of the field away from tall grass)

**Setting Up Flight Mission:**

1. Open in your phone the ***DJI 4 GO*** application and set homepoint
   1. Click bottom icon that says “Enter Device”
   2. Press three dots in the top right corner of the screen
   3. Press the quadcopter drone icon on the lefthand side (first one in list)
   4. Set homeport to current position by clicking the arrow icon
      1. Ensure the phone verbally says “home base set to current position”
2. Open the ***Pix4DCapture*** application
   1. **If you do not have a project already set up**, click on “Grid” and set up grid around field with flight border touching neighboring fields
   2. Click the setting icon in the upper right corner and go to “Advanced”
   3. Set up the following parameters
      1. Angle of camera: 90 degrees
      2. Front overlap: 85%
      3. Side Overlap: 85%
      4. Look at grid’s center: No
      5. Picture trigger mode: Fast mode
      6. Drone speed: Normal (middle of bar)
      7. White balance: Sunny
      8. Ignore homepoint: No
   4. **If you have a project already set up**, click on “Project List” in the bottom left corner and select desired project to run
      1. Click “Duplicate”
   5. Click “Start” and let the app ensure drone connection
   6. Click “Next” and let the app QC mission parameters
   7. Click “Next” and let the drone do its thing (make sure in the app that picture icons start showing up along the path of the drone as this indicates it is indeed taking images)
      1. Keep an eye on the drone at all times during flight! Ensure that the camera is facing straight down.
   8. Once the drone battery reaches ~25%, the phone will start beeping and once it reaches ~20%, have the drone return to the homepoint by pressing “Pause” in the Pix4D application and hitting the “Return Home” button in the remote control
   9. Turn the drone battery off by pressing the power button once and then a second time and holding it until off
   10. Remove battery and insert a new one. Turn on new battery.
   11. Click “Resume” in Pix4DCapture application and ensure drone flies to where it left off and continues taking images (camera icons)
       1. If having issues connecting to drone, restarts both the DJI Go (and reset a new homepoint) and the Pix4D app, go to project list, open and resume mission
3. Store the drone
   1. Turn off drone battery upon landing and then the remote control.
   2. Remove drone propellers and store in box.
   3. Remove drone battery and store in box.
   4. Remove microSD card and store in box in it’s case.
   5. Put foam camera holder and then gimbal clamp on drone and store in box.
   6. Store remote control.
4. Charge batteries and control remote once back in lab!
5. Save images under folder named by the date (mmddyyyy) in Desktop/2019 Drone Images and under LAB-Springer/Sara\_T/Photoscan Projects/2019/*field*/2019 Drone Images
6. Update [DataCollectionSummary\_2019](https://docs.google.com/spreadsheets/d/1xIPF0DQcKusztKYgOU1PcwpE1JDWymJnWCQrKpriODA/edit?usp=sharing) google doc (first sheet: 2019\_Summary) with flight information