

TuberTron Potato Piano

Andrew Smith and Erin Brandt, 2025

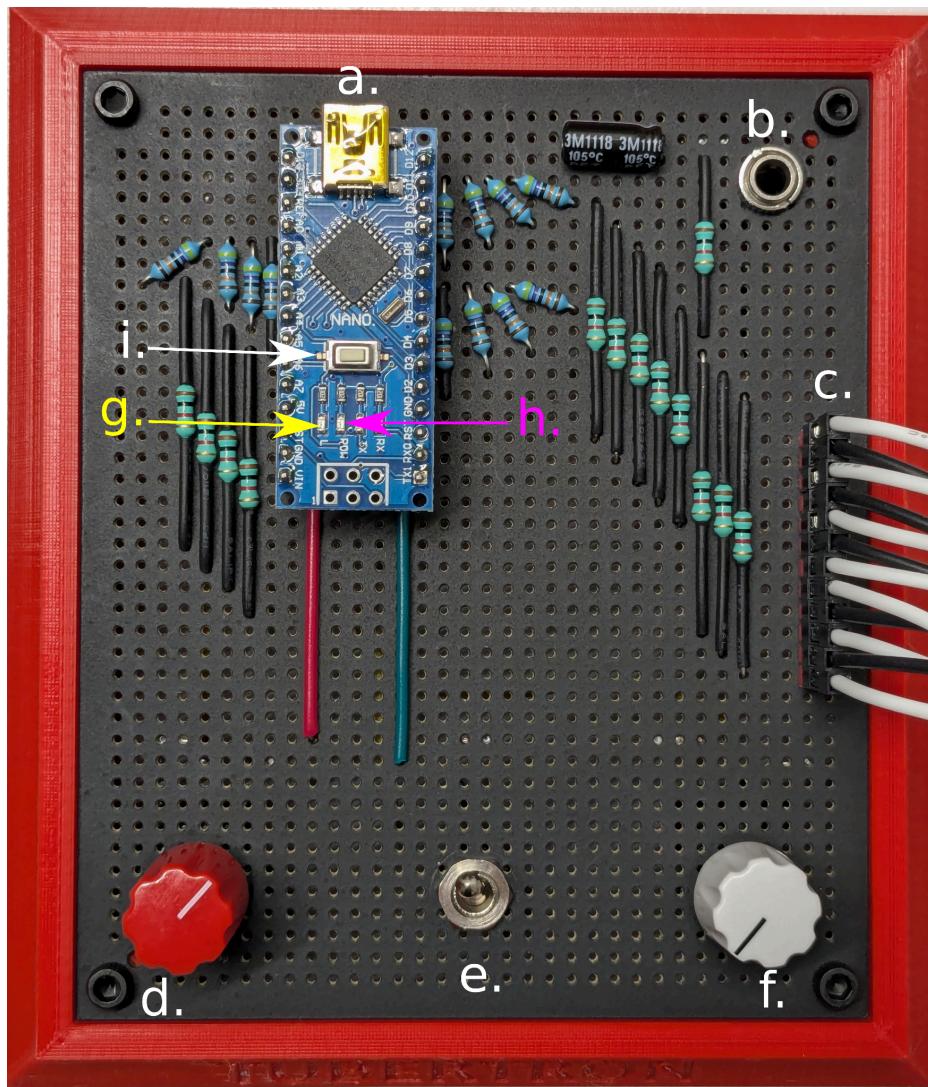


Figure 1. Illustration of potato piano with relevant features labeled

Features:

- a. Mini USB power input
- b. 1/8 in mini audio jack
- c. Potato input cables
 - o Input cables are arranged by lowest to highest note, bottom to top
 - o Natural notes are indicated by white cables, sharps and flats with black (like piano keys)
- d. Sensitivity knob
- e. Mode switch
- f. Effects knob

- g. Note indicator LED
- h. Power indicator LED
- i. Reset button

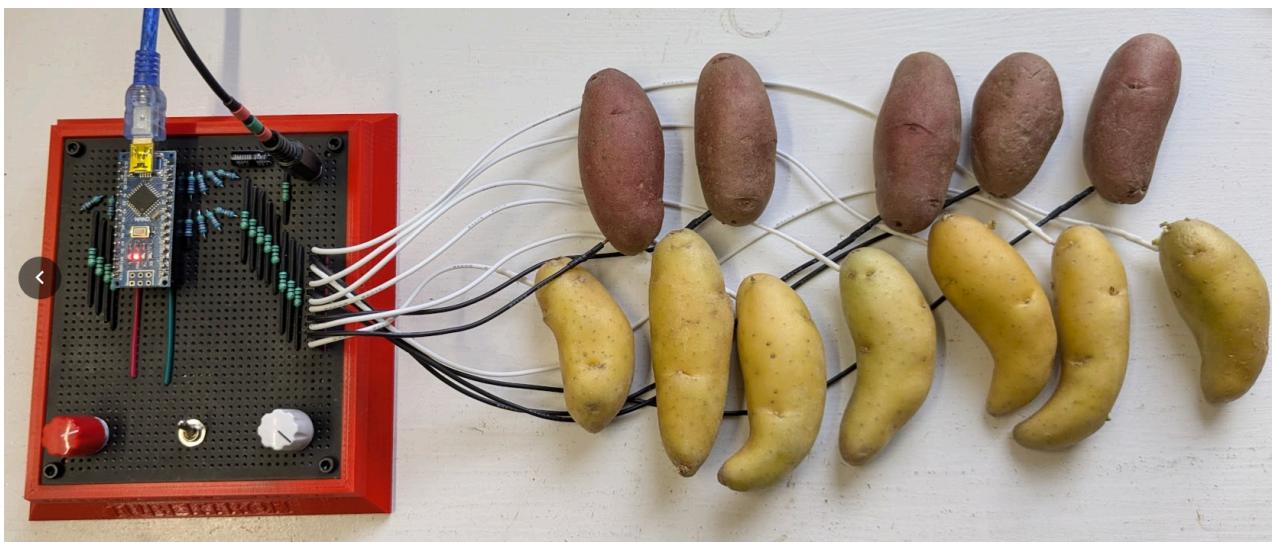


Figure 2. Potato piano in use, with attached potatoes

Set up:

1. Attach potatoes to the instrument by spearing potatoes with the sharp end of the potato input cables. Start with the longest cable for easier cable management.
2. Plug mini USB cable into power input, and then to power source (5V wall wart, USB battery pack, or computer will all work). When the instrument is powered, the power LED should glow red.
3. Plug audio cable into audio jack, and then into powered speaker.
4. Set the mode switch to the lower position (tone mode).
5. Turn the sensitivity knob all the way to the right (clockwise). It will likely start making noise and flashing the note indicator LED without touching any keys. If the LED flashes, but no sound is heard, check audio cable connection.
6. Repeatedly touch one or a few of the potatoes and turn the sensitivity knob to the left until at a desired sensitivity level.

To play:

1. In tone mode
 - a. Set the mode switch to the lower “tone” position
 - b. Select the desired octave with the effects knob
 - c. Play notes as desired
 - d. When you touch a potato, the note indicator LED will light up red for the duration of the note.
 - e. Octave can be changed any time that potatoes are not being touched
2. In wibble mode
 - a. Set the mode switch to the lower “tone” position
 - b. Select the desired octave with the effects knob

- c. Set the mode switch to the upper “wibble” position
- d. Use the effects knob to select the frequency of the vibration in the “wibble” noise
- e. Play notes as desired
- f. When you touch a potato, the note indicator LED will flash red with the frequency of the wibble noise.
- g. To change octave, switch back into tone mode temporarily

Tips/Troubleshooting

- Changing the knobs or switch will not register while a note is currently being played
- The sensitivity knob controls how sensitive the instrument is to touch. If it is set to be too sensitive, the instrument may play without touching, play with the hand some distance away from the potatoes, or with the potatoes touching one another. If it is not sensitive enough, it might require a great deal of contact with the hand or not play at all.
- Factors such as size and water content of potatoes, ambient humidity, and the power source can change the sensitivity, so it will likely need to be adjusted every time the instrument is used.
- In “tone” mode, the effects knob will move discretely between 4 chromatic octaves, each starting with C and ending with B. The octaves are:
 - C3 (131 Hz) → B3 (247 Hz)
 - C4 (262 Hz) → B4 (494 Hz)
 - C5 (523 Hz) → B5 (988 Hz)
 - C6 (1047 Hz) → B6 (1976 Hz)
- The octave can only be changed in “tone” mode
- The potato piano will only play one note at a time.
- It uses “last note precedence”. This means that if you are holding down one note, and begin to touch another, it will play the second note as soon as it is touched.
- Avoid touching exposed metal on the electrical components (knobs and switch excluded) when the instrument is powered on. Doing so could cause the instrument to stop responding, or even damage the microcontroller.
- If the instrument stops responding, use the reset button to reset the system, or unplug the power and plug back in.
- If you can’t hear any sound, but the note LED is lighting up, try adjusting the audio cable in the jack.
- There is no shutdown mode or off switch, simply unplug power when you are done with the instrument.
- If desired, potato input cables can be removed from the instrument. Grasp the black plastic connector and pull straight up. Never pull directly on the wire.
- Remove potatoes when not in use, as they could cause the cables to corrode.
- The instrument was tested with petite fingerling potatoes. It will likely work with other shapes and sizes of potatoes, and other fruits and vegetables as well. It won’t hurt the instrument to experiment in this way!