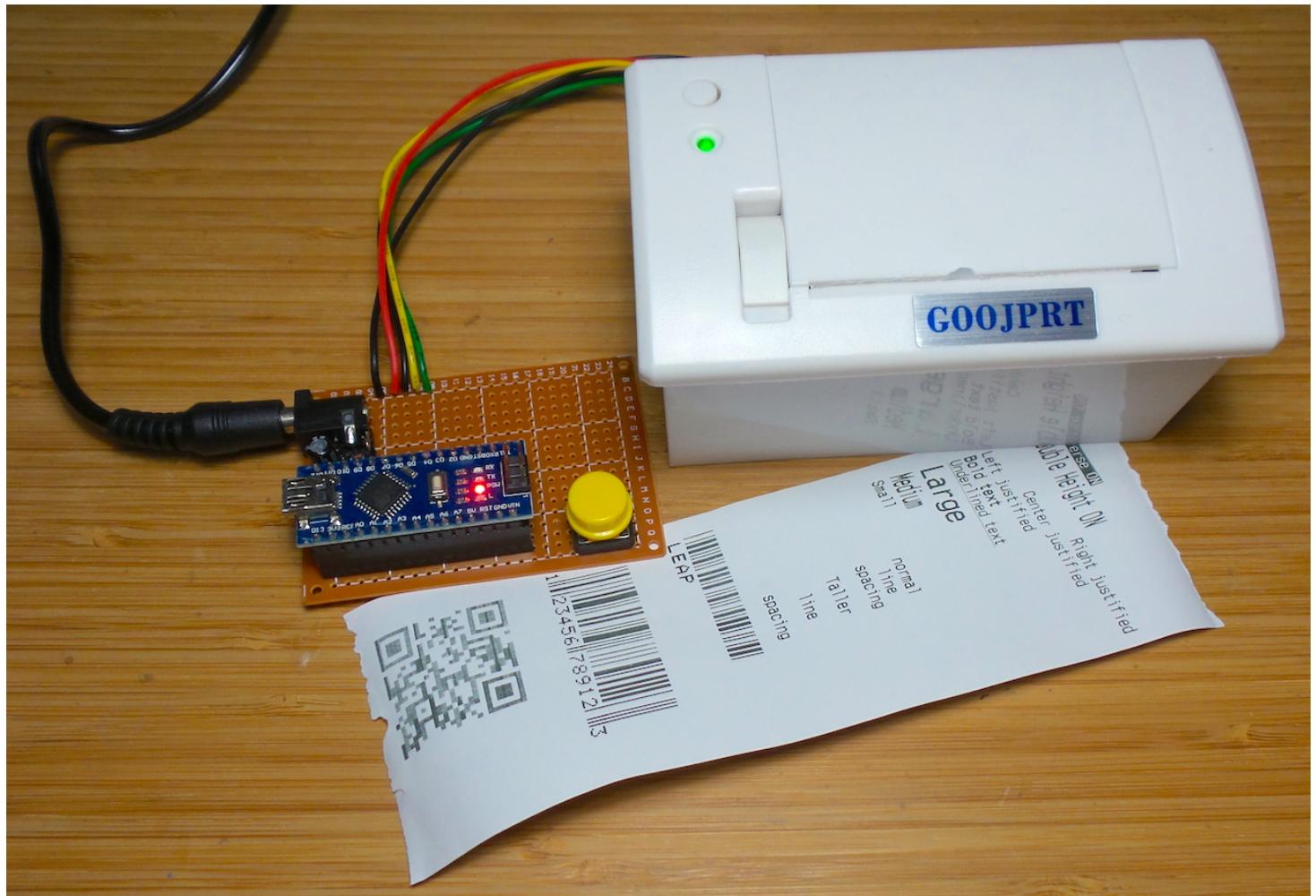


Project Notes

#523 JP-QR701 Thermal Printer Basics

Learning how to use the JP-QR701 thermal printer module with an Arduino, including QR codes generated with Python.



Here's a quick demo..



(https://www.youtube.com/watch?

v=U1RVI4zR9CQ)

Notes

I've wanted to play around with a thermal printer for a while, now I finally have the chance since I snagged a GOOJPRT QR701 Mini 58mm Embedded Receipt Thermal Printer (<https://www.aliexpress.com/item/32890205918.html>) on aliexpress.

After a bit of investigation, I discovered the OEM is 厦门精普电子科技有限公司 Xiamen Jingpu Electronic Technology Co Ltd (<http://www.xmjprt.com/>), and they specialise in a wide range of thermal printing products. The JP-QR701 is a very similar (identical OEM?) to products available from AdaFruit, Sparkfun and other retailers.



JP-QR701 Specs

JP-QR701 58mm embedded miniature thermal printer

- small size, light weight, fully functional
- simple, easy connection
- high-speed, high-quality, stylish
- standard GB2312 large font
- Printing method: Thermal dot line printing
- RS232 / TTL interfaces, voltage 5-9V / 12V

Feature	Sepcification
printing method	Thermal line
Print width	48 mm
Dot density	384 points / line
printing speed	90 mm / s
Interface Type	RS232 / TTL

Feature	Sepcification
Paper roll diameter	≤ 40mm
Paper thickness	0.06-0.08mm
Paper roll	Width: 57.5 ± 0.5 mm
Character size	ANK character, Font A: 12 × 24 dots, Font B: 9 × 17 dots
Barcode Hard font	GB2312 font
Barcode type	UPC-A / UPC-E / JAN13 (EAN13) / JAN8 (EAN8) / CODE39 / ITF / CODABAR / CODE93 / CODE128
Input buffer	32k bytes
NV Flash	64k bytes
Printer input voltage	DC 5V / 2A
Cash drawer control	DC 5V / 1A
weight	0.183 kg
dimension	109 × 94 × 66mm (depth × width × height)
working environment	Temperature: 0 ~ 45 °C, Humidity: 10 ~ 80%
Storage environment	Temperature: -10 ~ 60 °C, humidity: 10 ~ 90%
Print head life	50 km



Self-test

Hold down the button on the top of the printer (or on the control board) while plugging in the power. A diagnostic is printed. This worked for me without issue (using a 5V 2A power supply).



(<https://www.youtube.com/watch?v=RProFcxC7iY>)

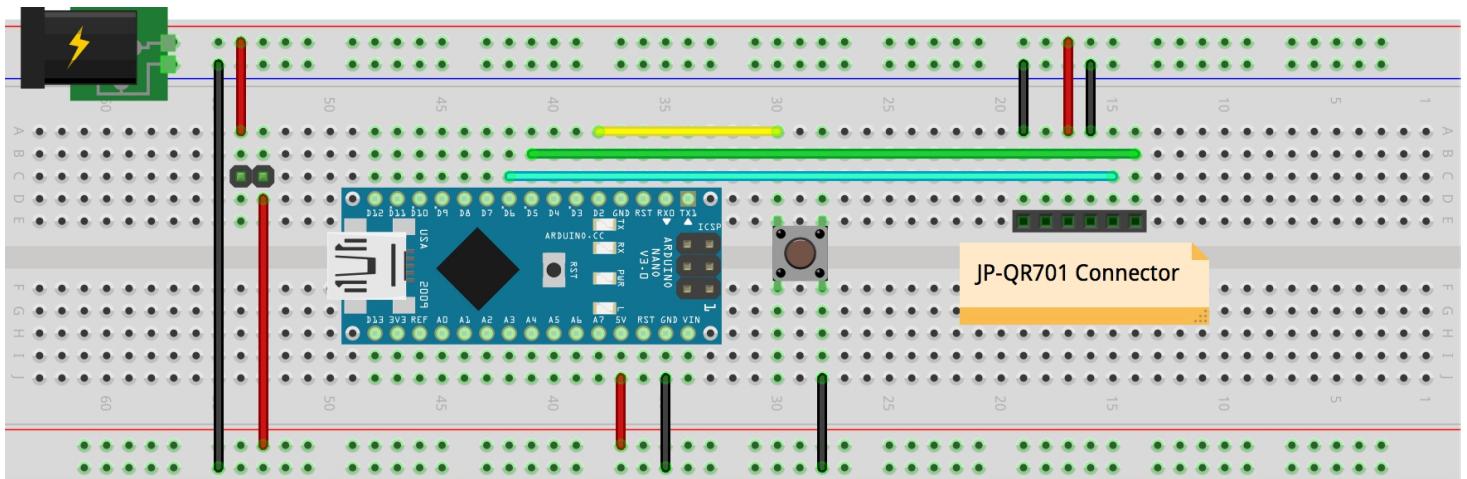
Construction

I have the TTL version of the JP-QR701, so driving it from an Arduino presents no problems.

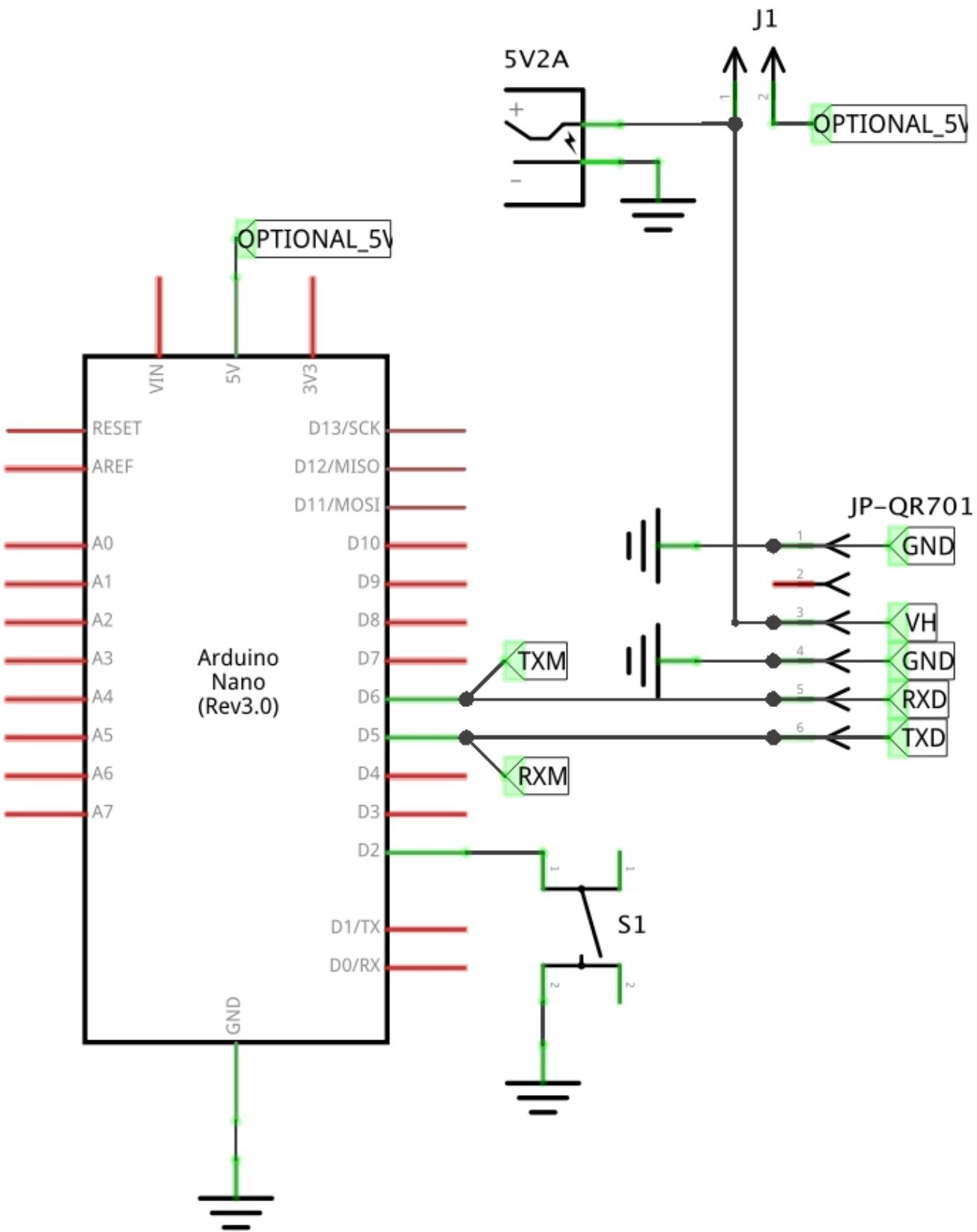
I put together a simple protoboard test base for a Nano, power supply and printer connections:

- barrel jack for 5V 2A power supply

- mounted the leads for the printer connection
- females headers for mounting an Arduino Nano
- jumper selects whether to power the Nano from the same supply as the printer, with a couple of bulk caps for the Nano supply to smooth out any power fluctuations caused by the printer.



fritzing



fritzing

Example Code

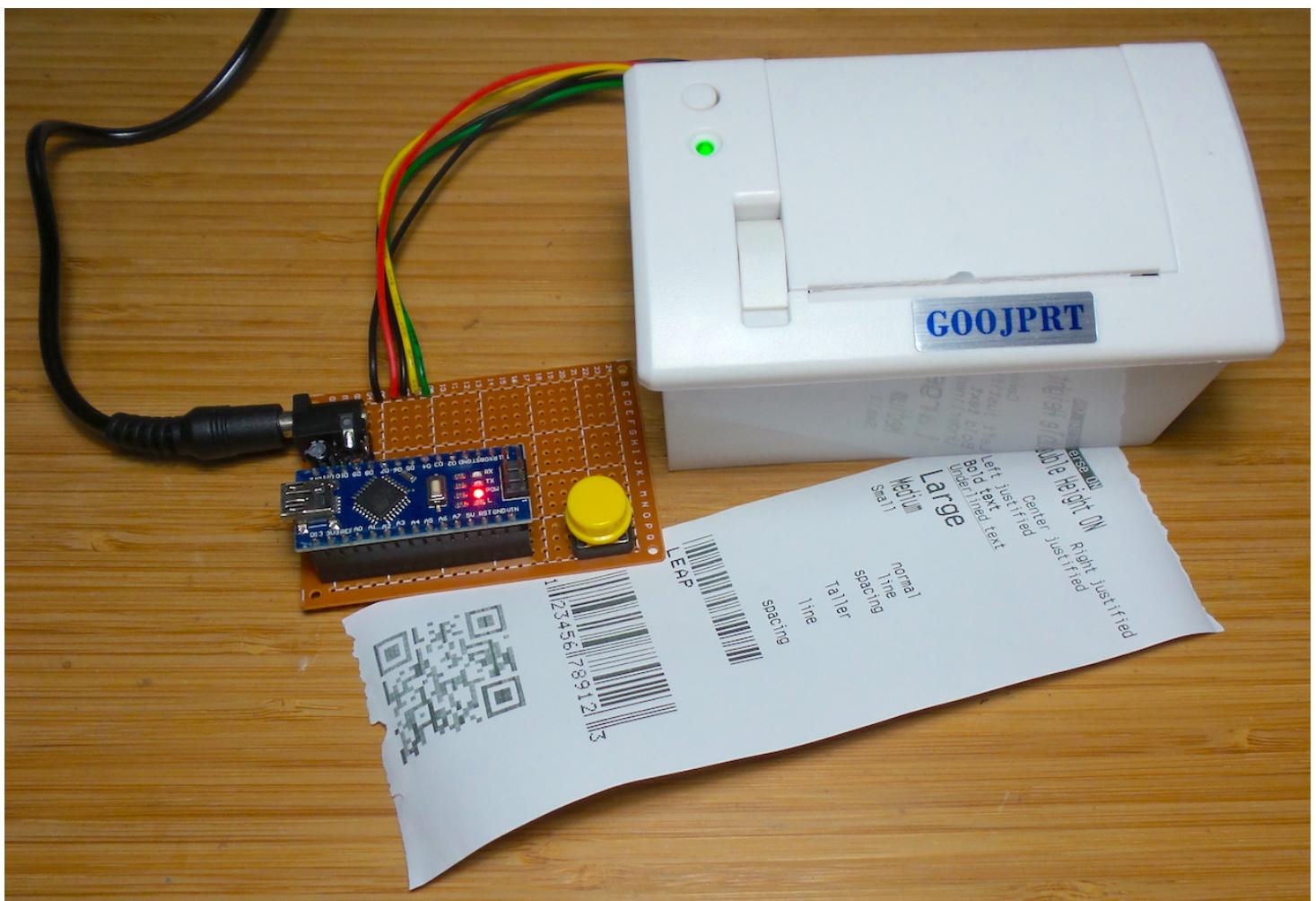
The QR701Basics.ino (./QR701Basics.ino) sketch is a simple test of the printer, based on an example from the Adafruit Arduino Library for Small Thermal Printers (<https://github.com/adafruit/Adafruit-Thermal-Printer-Library>).

I've customised it a bit:

- prints the test page on a button press (instead of at startup)

- add my own QR code

The QR code data in qrcode.h ([./qrcode.h](#)) was generated with a python script from here (<https://codingkata.tardate.com/python/qrcodes/>). I think I need to fiddle with the `ESC 7` Setting Control Parameter Command and/or `DC2 #` printing density settings, because so far while the printer generates a recognizable QR code, I can't scan it with my phone without first colouring it in with a black pen!



Credits and References

- Original GOOJPRT QR701 Mini 58mm Embedded Receipt Thermal Printer RS232/ TTL Mini Embedded Receipt Thermal Printer ESC/POS Print (<https://www.aliexpress.com/item/32890205918.html>) - my source on aliexpress
- JP-QR701 Product Info (<http://www.xmjprt.com/bbx/2457738-2457758.html?id=52829&pid=2284264>)
- CSN A2 Micro panel thermal printer manual (<https://cdn-shop.adafruit.com/datasheets/CSN-A2+User+Manual.pdf>) - adafruit; similar/same product? contains full command code doc
- A2 Micro panel thermal printer manual (<https://www.sparkfun.com/datasheets/Components/General/A2-user%20manual-1.pdf>) - sparkfun; similar/same product?
- 厦门精普电子科技有限公司 Xiamen Jingpu Electronic Technology Co Ltd (<http://www.xmjprt.com/>) - OEM
- Mini Thermal Receipt Printer (<https://www.adafruit.com/product/597>) - AdaFruit product ID 597
- Mini Thermal Receipt Printer tutorial (<https://learn.adafruit.com/mini-thermal-receipt-printer?view=all>) - adafruit
- Adafruit Arduino Library for Small Thermal Printers (<https://github.com/adafruit/Adafruit-Thermal-Printer-Library>)
- Arduino Nano (<https://store.arduino.cc/usa/arduino-nano>)
- Interrupt problem with Nano (<https://forum.arduino.cc/index.php?topic=526497.0>)

🔗 Project Source on GitHub (<https://github.com/tardate/LittleArduinoProjects/blob/master/playground/ThermalPrinter/QR701Basics/>)

🖼 Project Gallery (/gallery)

◀◀ Return to the LEAP Catalog (<https://leap.tardate.com>)

This page is a web-friendly rendering of my project notes shared in the LEAP GitHub repository.

LEAP is just my personal collection of projects. Two main themes have emerged in recent years, sometimes combined:

- electronics - usually involving an Arduino or other microprocessor in one way or another. Some are full-blown projects, while many are trivial breadboard experiments, intended to learn and explore something interesting
- scale modelling - I caught the bug after deciding to build a Harrier during covid to demonstrate an electronic jet engine simulation. Let the fun begin..

To be honest, I haven't quite figured out if these two interests belong in the same GitHub repo or not. But for now - they are all here!

Projects are often inspired by things found wild on the net, or ideas from the many great electronics and scale modelling podcasts and YouTube channels. Feel free to borrow liberally, and if you spot any issues do let me know (or send a PR!). See the individual projects for credits where due.

LittleArduinoProjects (<https://leap.tardate.com/>) LittleCodingKata (<https://codingkata.tardate.com/>)
⌚ ([HTTPS://GITHUB.COM/TARDATE](https://github.com/TARDATE))
💻 ([HTTPS://STACKOVERFLOW.COM/USERS/6329](https://stackoverflow.com/users/6329))
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Ⓜ️ ([HTTPS://WWW.INSTAGRAM.COM/LITTLE.ELECTRONIC.ART.PROJECTS/](https://www.instagram.com/little.electronic.art.projects/))
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