Contents

Issue 135 > November 2023

Cover Feature

36 Raspberry Pi Launch Special

Regulars

- 32 Case Study: Arribada
- **92** Your Letters
- 92 Events calendar
- 97 Next Month
- **98** The Final Word

Project Showcases

- **10** Blackberry Pi
- 14 Drill Press Camera
- 16 TouchCam
- **20** ScreenDress
- 22 Instant Framed Camera
- **26** Gutter Probe
- 28 PicoSynth







The MagPi is published monthly by Raspberry Pi Ltd, Maurice Wilkes Building, St. John's Innovation Park, Cowley Road, Cambridge, CB4 0DS, United Kingdom. Publishers Service Associates, 2406 Reach Road, Williamsport, PA, 17701, is the mailing agent for copies distributed in the US and Canada. Application to mail at Periodicals prices is pending at Williamsport, PA, POSTMASTER: Send address changes to The MagPi, c/o Publishers Service Associates, 2406 Reach Road, Williamsport, PA, 17701.

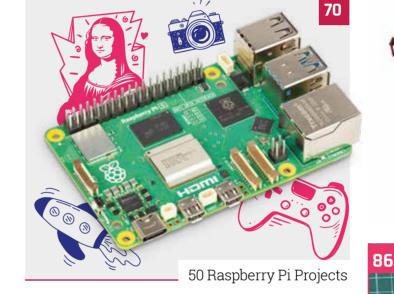
Tutorials

- **50** Using Ubuntu part 1
- **54** Introduction to MQTT
- 58 Make a mecanum robot
- **64** Build a Bluetooth torch remote

The Big Feature







Reviews

- 82 ClipZin
- **83** CM4 XGO-Lite robot dog kit
- **84** Learn circuits and electronics

Community

- **86** Nai-Wen Hsu interview
- 88 This Month in Raspberry Pi



DISCLAIMER: Some of the tools and techniques shown in The MagPi magazine are dangerous unless used with skill, experience, and appropriate personal protection equipment. While we attempt to guide the reader, ultimately you are responsible for your own safety and understanding the limits of yourself and your equipment. Children should be supervised. Raspberry Pi Ltd does not accept responsibility for any injuries, damage to equipment, or costs incurred from projects, tutorials or suggestions in The MagPi magazine. Laws and regulations covering many of the topics in The MagPi magazine are different between countries, and are always subject to change. You are responsible for understanding the requirements in your jurisdiction and ensuring that you comply with them. Some manufacturers place limits on the use of their hardware which some projects or suggestions in The MagPi magazine may go beyond. It is your responsibility to understand the manufacturer's limits.



Make a mecanum robot

Build a Bluetooth torch remote



CM4 XGO-Lite robot dog kit



Nai-Wen Hsu interview