



# Contents

Issue 71 July 2018

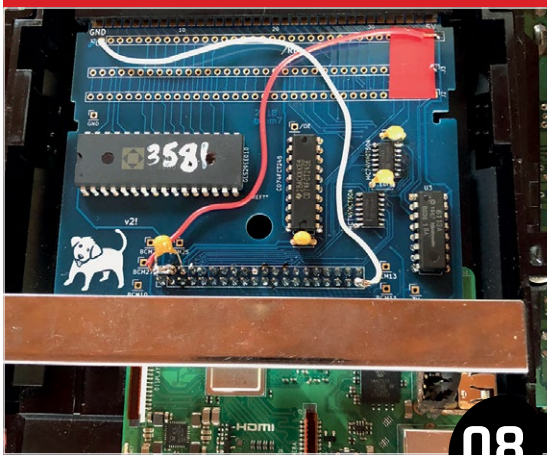
raspberrypi.org/magpi

## TUTORIALS

- > **PI 101: REMOTE ACCESS VIA VNC** 42  
Connect to your Pi remotely using VNC
- > **BUILD AN OSCILLOSCOPE** 44  
Use a Raspberry Pi and Arduino to make your own
- > **LEARN PYGAME ZERO: PART 1** 52  
Making games is easy with Pygame Zero
- > **USE AI WITH TENSORFLOW** 58  
Google's AI functions work on Raspberry Pi
- > **MAKE GAMES IN C PART 7** 60  
Learn how to build maps with your game elements
- > **TAKE NATURE PHOTOS** 64  
Build a wildlife trap to snap some critters

## IN THE NEWS

### POWERED UP NES



Reverse-emulating an NES console

08

### MOONHACK



Break another record!

10

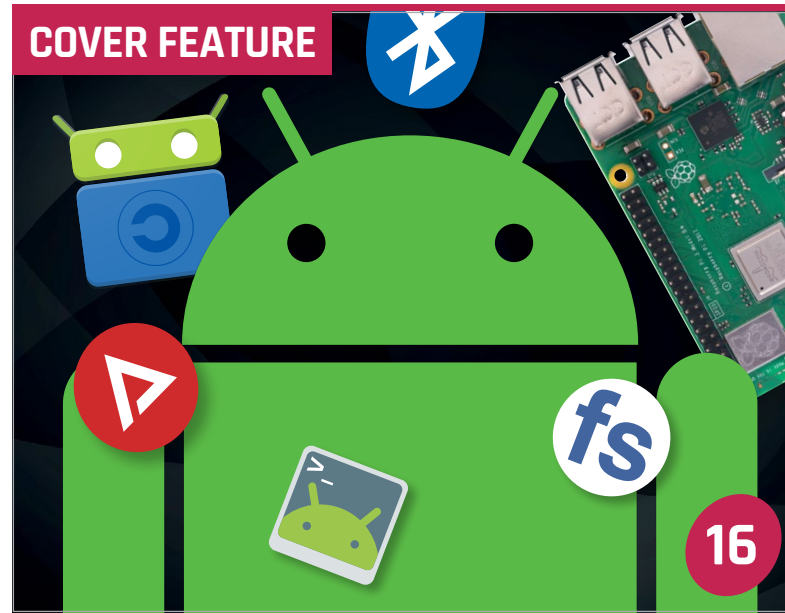
### PI GLIDER



A novel high-altitude craft

12

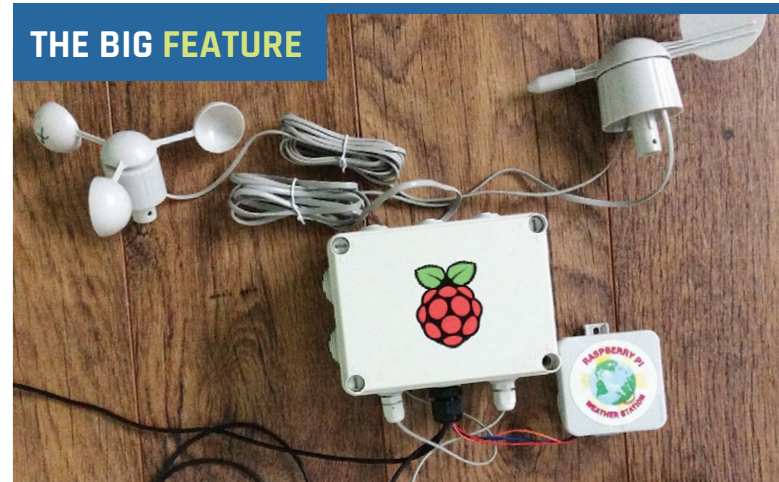
## COVER FEATURE



16

# ANDROID ON PI

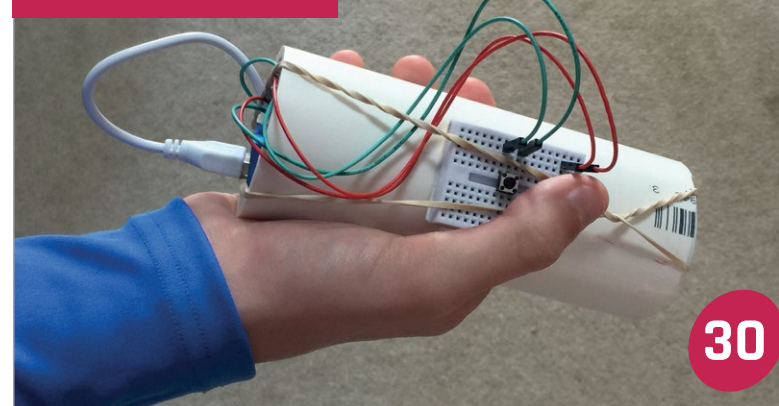
## THE BIG FEATURE



## WEATHER STATION 70

Build a Pi-powered weather station

## YOUR PROJECTS

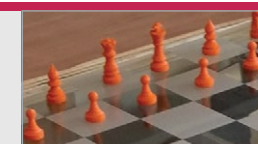


30

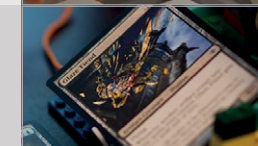
# SEEING WAND

Using Microsoft's AI tools, it will tell you what's ahead of you

**GHOST CHESS** 32  
A spooky chess game with a haunted Pi



**CARD APPRAISAL** 34  
Find out how much your trading cards are worth



**MYHOUSE** 36  
An automated doll's house

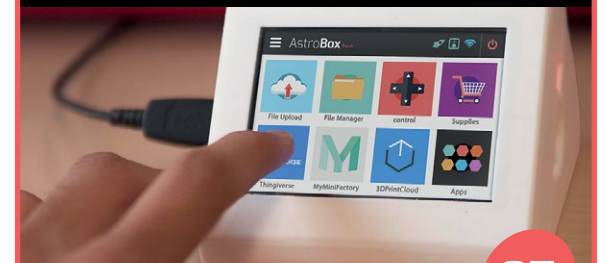


**VOMIT COMIC ROBOT** 38  
Print out randomly generated comics



**WIN!** In association with **Astroprint**

# ASTROBOX TOUCH & GATEWAY



We've got four AstroBox kits up for grabs to control your 3D printer from anywhere!

97

## REGULARS

- > NEWS 06
- > TECHNICAL FAQ 68
- > BOOK REVIEWS 84
- > FINAL WORD 98

## COMMUNITY

- > **THE MONTH IN RASPBERRY PI** 86  
Translate some resources this month
- > **BRIAN CORTEIL PROFILE** 90  
We talk to one of the top UK Pi robot makers
- > **EVENTS** 92  
What events are happening this month
- > **YOUR LETTERS** 94  
Excellent answers to wonderful questions

## REVIEWS

- > **YETIBORG V2** 80
- > **PI-HOLE** 82