

Contents

06 SPARK

- 06 **Top Projects**
You too can build something amazing!
- 16 **Objet 3d'art**
3D printing for pros
- 18 **Meet the Maker: Josef Průša**
The king of open hardware printing speaks
- 22 **Columns**
What qualifications do you need to be a maker?
- 24 **Letters**
Beer and Zeppelin, two of the greatest things ever
- 25 **Kickstarting**
Resurrecting good old Ethernet
- 26 **Cool Build As We Are**
The world's biggest and best selfie machine

Cover Feature

Build Your First ROCKET
Design, build and fly your first rocket. Space Force!

32

122



31 LENS

- 32 **Build your first rocket**
The Space Race continues
- 46 **Global Open Science Hardware**
How makers are bringing science out of the classroom
- 52 **Interview AmieDD**
We meet a real life cyborg. Yes, really!
- 60 **Improviser's Toolbox** Light bulbs
Make lovely things with glass spheres of magic



88

Tutorial Alexa wheel of fortune



82 Alexa! Spin the polygon of destiny!

CONTENTS

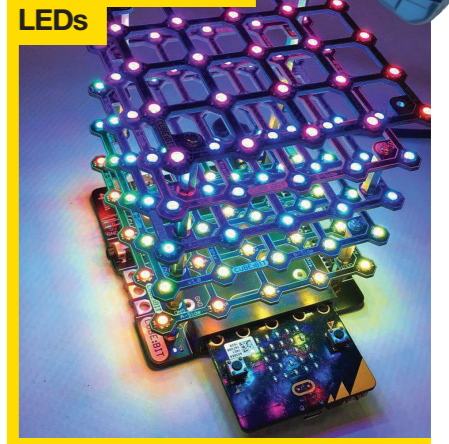
46



78



Best of Breed



116 Make Piccadilly Circus/Times Square in your living room

26



Interview

AmieDD



52

What links this person with the Xbox One? Demons, of course...

65

FORGE

- 66 **SoM Arduino**
Make noise accurately with interrupts
- 72 **SoM Electronics 101: Diodes**
The gate-keepers of electric current
- 78 **Tutorial Drills**
Everything you need to know about making holes
- 82 **Tutorial Alexa wheel of fortune**
Use Amazon's voice assistant to tell the future
- 86 **Tutorial Rubber stamps**
Create custom-designed stamps
- 88 **Tutorial Way-home meter**
Let your loved ones know where you are
- 94 **Tutorial Skull bowl**
Is it an ancient curse or capacitive touch?
- 98 **Tutorial Copper piping**
Steampunk lighting – the HackSpace way
- 102 **Tutorial Number-plate reader**
Teach your garage to recognise your car
- 108 **Tutorial Machine learning**
Create an AI botanist out of a Raspberry Pi

113

FIELD TEST

- 114 **Direct from Shenzhen** Multimeters
Cheap and cheerful electronics essentials
- 116 **Best of Breed**
Easy ways to add shiny LEDs. More blinkenlights!
- 122 **Can I Hack It?**
What can we make with an IoT light bulb?
- 124 **Review Anet Prusa A8**
Want to learn every facet of 3D printing? Get one of these
- 126 **Review SparkFun Deluxe Tool Kit**
An electronics workshop in a box
- 128 **Review Simulant Retro WiFi SI**
Access the modern internet on ancient hardware
- 129 **Book Review** Collins Woodworker's Manual
The bible of making things out of trees

Some of the tools and techniques shown in HackSpace 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. HackSpace Magazine is intended for an adult audience and some projects may be dangerous for children. Raspberry Pi (Trading) Ltd does not accept responsibility for any injuries, damage to equipment, or costs incurred from projects, tutorials or suggestions in HackSpace Magazine. Laws and regulations covering many of the topics in HackSpace 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 HackSpace Magazine may go beyond. It is your responsibility to understand the manufacturer's limits.