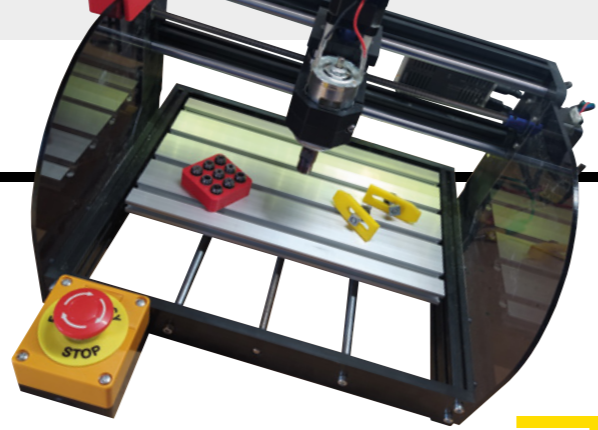


Contents



72



110



102



76

06 SPARK

- 06 **Top Projects**
Creativity abounds in these homemade projects
- 18 **Objet 3d'art**
How to never lose your SD card again: supersize it
- 20 **Meet the Maker: Willow Creative**
Great cosplay starts with a hacked 3D printer
- 28 **Letters**
On the false economy of free wood
- 30 **Kickstarting**
Brilliant, unique wearable designs by Dr Kitty Yeung

33 LENS

- 34 **Raspberry Pi builds**
Physical projects using the #1 tiny computer
- 46 **How I Made: Ever-blooming Flower**
Brass, wood, electronics, 3D printing... and lots of love
- 52 **Interview: Laura Kampf**
On tattoos, trolls, and joy of *The Simpsons*' intros
- 62 **Improviser's Toolbox** Milk cartons
Face, flowers, Imperial Stormtroopers, and more
- 66 **In the workshop** Knife handle
Working with wood that smells of sweet sweet Glenlivet

How I Made

Ever-blooming flower



46 The road to perfection is paved with broken prototypes

Interview

Laura Kampf



52 Why the workshop is Laura Kampf's happy place

Tutorial

Build a game

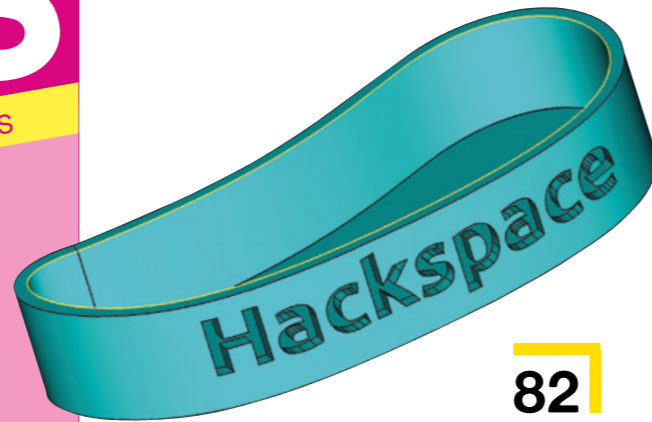


88 As with Tetris, the simplest things are often the most complex

Cover Feature

BEST RASPBERRY PI BUILDS
Make wonderful things with the world's favourite computer

34



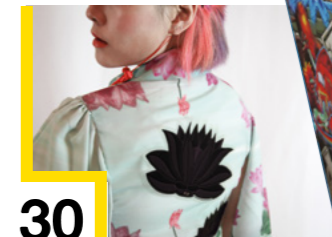
82

69 FORGE

- 70 **SoM Raspberry Pi Pico**
Control your Pico remotely
- 72 **Tutorial Upgrade your CNC machine**
Essential add-ons to make a good machine great
- 76 **Tutorial Build an arcade machine**
Add delicious vinyl decoration to the final build
- 82 **Tutorial FreeCAD**
Create fluid shapes with curves and extrusions
- 88 **Tutorial Frustration box**
Build a compelling game with just two buttons
- 96 **Tutorial Nibble**
Learn the nuts and bolts of video game design



06



30

101 FIELD TEST

- 102 **Best of Breed**
Walking robots to amuse/terrify
- 108 **Review Pico VGA Demo Base**
Add graphics and sound to your Raspberry Pi Pico
- 110 **Review Nibble**
Learn to program on this handheld gaming kit
- 112 **Review EasyEDA**
Design PCBs in your humble web browser



66

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.