Contents

SPARK
06 Top Projects
Brighten things made by brilliant people
18 Objet 3d’art
Shake it (automatically) like a Polaroid picture
20 Meet the Maker: UNIQ Furniture
Upcycling done right, by Andrew Smith
26 Columns
A remedy for anti-social media
28 Letters
Music! Robots! Requests!
30 Kickstarting
Where take means 3D printing

LENS
34 Build a robot
Motors, sensors, actuator
48 How I Made: A scrolling face mask
Combine Covid hygiene with reactive blinkenlights
54 Interview: Rob Ives
On the limitations and possibilities of paper
62 Improviser’s Toolbox Cardboard
The best bit of any new toy is the box
66 Making a maker business
Today: an idea. Tomorrow: Omni Consumer Products

FORGE
71 Restoration
Give new life to old tools
72 SoM Restoration
Tough and good-looking printing filament
74 SoM Copolyester
76 Tutorial Raspberry Pi
Read RFID and NFC tokens with a HAT
78 Tutorial Home Automation
Let the machines control your house
82 Tutorial Laser etching
Adapt a laser cutter to etch glassware
86 Tutorial FreeCAD
Customise your wheels
92 Tutorial Found sound
Find unexpected musical treats everywhere

FIELD TEST
106 Direct from Shenzhen Belt sander
Can you get cheap, reliable machine tools from China?
110 Interview: Rob Ives
Teaching the world engineering… using paper

Cover Feature
BUILD A ROBOT
Take control of every single component and build the perfect mechanical companion

Contents

06 Top Projects
Brighten things made by brilliant people
18 Objet 3d’art
Shake it (automatically) like a Polaroid picture
20 Meet the Maker: UNIQ Furniture
Upcycling done right, by Andrew Smith
26 Columns
A remedy for anti-social media
28 Letters
Music! Robots! Requests!
30 Kickstarting
Where take means 3D printing

34 Build a robot
Motors, sensors, actuator
48 How I Made: A scrolling face mask
Combine Covid hygiene with reactive blinkenlights
54 Interview: Rob Ives
On the limitations and possibilities of paper
62 Improviser’s Toolbox Cardboard
The best bit of any new toy is the box
66 Making a maker business
Today: an idea. Tomorrow: Omni Consumer Products

71 Restoration
Give new life to old tools
72 SoM Restoration
Tough and good-looking printing filament
74 SoM Copolyester
76 Tutorial Raspberry Pi
Read RFID and NFC tokens with a HAT
78 Tutorial Home Automation
Let the machines control your house
82 Tutorial Laser etching
Adapt a laser cutter to etch glassware
86 Tutorial FreeCAD
Customise your wheels
92 Tutorial Found sound
Find unexpected musical treats everywhere

106 Direct from Shenzhen Belt sander
Can you get cheap, reliable machine tools from China?
110 Interview: Rob Ives
Teaching the world engineering… using paper

Some of the tools and techniques shown in HackSpace Magazine are dangerous unless used with skill, experience and appropriate personal protective 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 not held responsible for any injuries, damage to equipment or cost incurred from projects, tutorials or suggestions in HackSpace Magazine. Laws and regulations covering many of the topics in this magazine may be different in other countries. 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.