

MadLab

Innovation Workshops Brochure

AUTUMN 2018



CONTENTS:

1. MISSION

2. ELECTRONICS

^****AZVgç`id`HdaYZg
 ^****6g/j`çd
 ^****<Zi`i]Z`7j`\[dg`8dY`ç\`i`↑]`8dYZ`7j`\
 k`***8dY`ç\`i`↑]`i]Z`b`XgdWt
 k`***Diid`GdWdih
 k`^^K`g/j`VaGZVatn`:`mæZgZcXZ
 k`^^8db`ej`iZg<Vb`Z`9Zh^c
 k`^^(`9`=ZVY`HXVc`VcY`Egçi
 ^m`8gZViZ`Ndj`gDI`c`B`>9Zk`XZh
 m`***8gZVi`kZ`8dY`ç\`i`↑]`EgdXZhç\
 m`^^>GA`:`b`d`_8gZVi`çd`(`9`Egçi`ç\`VcY`\$dgAVhZg8j`ii`ç\

3. RASPBERRY PI

^*****8dY`ç\`B`j`h`X
 ^****=VX`ç\`B`çZXg/[i
 ^****Egd\g/v`b`ç\`HXg/iX]
 k`***E]`nh`XVa`Xdb`ej`i`ç\`i`↑]`HXg/iX]
 k`***<Vb`Z`9ZkZæeb`Zci`ç`HXg/iX]

4. SCIENCE & DIGITAL MAKING

^*****HXZcXZ`7j`h`ç\
 ^****(`9`Egçi`ç\`9Zb`d
 ^****L`ZVg/WZ`i`ZX]
 k`***8dcYj`Xi`kZ`EV`çi

5. PATTERNCRAFT

^*****7`çVgn`B`çZXg/[i`6c`b`Vi`çd
 ^****:`cXdY`ç\`9ViV
 ^****E`ViiZgç7ZVih
 k`***E`ViiZgçXg/[i`fi`(`9`Egçi`ç\
 ^*****k`***Egd\g/v`b`ç\`i`j`g`Z`h
 k`^^ç`[g/gZ`Y`8`gX]`↑h
 k`^^:`c\`çZZgndj`gdl`c`GVVYZg

6. ADDITIONAL INFORMATION

1 MISSION

Welcome to MadLab, i] Z'J @h ædc\Zhi"j cc'è\`VcY`most active

b V` ZgheVXZ#L Z gž`eVhh'ðcViZ`VWdj i`b V` è\`HXZcXZ!`i ZX] cdæ\`n!`6gh VcY`Xdb ej i`è\`cdi`dca`[j c` `Wj i`gž`ZkVci!`Xdb eZæ'è\`VcY`ZmX↑è\` `id V`WpVY`VcY`gVe`Yan`gdI è\`heZXig b`d[j hZgh#

B VYAVWWhd`l dg h`dc`WZ] Vā`d[`dgVc`hVi`ðch!`hX] ddh!`æXVāXdj cX`h! i] gY`hZXidgVcY`XgžVi`kZ\$`iZX] `dgVc`hVi`ðch!`id`YZakZgb V` è\`VcY`Y^`↑VāXdj ghZh`id`i] Z`g] hZgh#

B VYAVWWh`XgžVi`kZ`l dg h] deh`Vgž`eZg[ZXi`[dgXdc`i`èj ZY`egd[Zhh`ðcVa YZkZæ`eb Zci`VcY`XVc`WZ`iV`adgY`[dgiZVX] Zgh`VcY`ZYj XVI`ðcVa egd[Zhh`ðcVh`iZVX] è\`Vi`Vcn` Zn`hiV\Z`æzkZæ#

Egžk`ðj h`XaZcih`èXā YZ/6gh`8dj cX`ā: c\`a/cY!`; j ij gž: kZgni] è\`!`?V\j Vg AVcY`GdkZg`l] Z`EgèXZ`h`l g`hi!`l] Z`L Zæ`Xdb Z`l g`hi!`CZhiV!`l] Z`Cdb`èZi`l g`hi!`l] Z`J c`kZgh`↑n`d[`B VcX] ZhiZg`B VcX] ZhiZg`B Zig`pda`fVc!`7g^] iZg Hdj cYh!`L] ↑l dg] `6g`<Væžgn!`B VcX] ZhiZg`8`↑n`8dj cX`ā`VcY`?d] c`AZI`h`#

FACILITATOR COSTS: v(*% [dgV [j æYVn Ł- "] dj ght \$ v' %% [dgV] Vā YVn Ł) "] dj ght "" 6æiegXZh`Vgž`ZmXā h`kZ`d[`K6l`#

Contact us:

Zb V`ā/ [æVgç5 b VYā/W#dg`#`](#)
 il`↑iZg/ 5 b VYā/Wj`
 e]dcZ/ ž)) Ł& , - .) " , -) - ,
 VYYgžhh/ B VYAVW5`EA6CI`CDB 6!`GZY[Zgç!`9Vcio`X`Hi`gžZi!`CDB 6!
 B +%`%6:

2 ELECTRONICS



i. LEARN TO SOLDER

I] Z >8Vc HdāZg 7VY\Z ħ V WWh'X hdāZgĉ\ ` ↑ i] Vi egk'YZh i] Z 'YZVaeāi [dgb [dg iZVX] ĉ\ eZdeā] dl id hdāZg#6 Xdj eā d[b ĉj iZh VcY i] Z YZ[i I VkZ d[V hdāZgĉ\ ğc!VcY`ndj aħddc`] VkZ`V[a/h] ĉ\ `WY\Z`id`i ZVgI ↑] `egYZ`

Dj gAZVgc id HdāZgl dg h] de ħ WZhi g c Vh V Ygde"ĉ hZhh'ĉc#: VX] WY\Z iV` Zh j hi * &%b ĉj iZh id Xdb eāzi! VcY dcZ [VX'āVidgXVc ĉhig Xi j e id [dj geZdeā Vi dcZ i`b Z#

Hj 1WāZ [dg VZ\ ĉcZgh# B ViZgVa Xdhih v' #%eZgħc je id &%% WY\Z `1h dg v' #8%eZgħc`dkZg&%%WY\Z` 1h

ii. ARDUINO

6gj ċdˆXVcˆWZˆj hZYˆidˆb Vˆ ZˆVaaˆ ċYhˆd[i] ċ\h!ˆ[gd bˆ iˆċn!ˆ ZVgˆWZhˆidˆa/gˆZˆhXVzˆ ċiZgˆXiˆkZˆċhiVaaˆ/iˆċdch#KZghViˆz!ˆWZˆ\ċcZgˆ[gZcYan!ˆVcYˆVWdkZˆVaaˆ[jˆc!ˆi] ħ!ˆ dg h] de lˆ ħ\ˆkZˆndjˆ Vcˆċhˆ\ˆ] iˆċidˆ] dlˆ idˆ\ZiˆhiVgZYˆ!ˆ ↑]ˆ ndjˆ gdlˆ cˆZnˆXZaˆZci Yˆ^ˆ↑Vde] nhˆXVaaegdˆ_ZXi h#

Hj ↑WZˆ[dgVZˆ\ċcZgh#7VhXˆiVˆZˆ]db Zˆ6gj ċdˆ ˆhX] VgˆZYˆVˆv+ˆ \$eZghdc#

iii. GET THE BUG FOR CODING WITH CODE BUG

6ˆ[j cˆVcYˆZcˆ\ˆ\ˆċ\ˆċigdYj XiˆċdˆidˆZVhnˆYgˆ\ˆ"VcYˆ"Ygdeˆegdˆ\gˆ/b bˆ ċ\ˆVcYˆ ZzXi gdcˆXh#8dYZ7j \ˆ ħˆVˆB VcX] ZhiZgˆWdgcˆċˆ↑ˆViˆkZ!ˆYZhˆ^ˆcZYˆVhˆVˆ[j cˆVcYˆZcˆ\ˆ\ˆċ\ˆ ċigdYj XiˆċdˆidˆYgˆ\ˆ VcYˆYgdeˆegdˆ\gˆ/b bˆ ċ\ˆVcYˆZzXi gdcˆXh#

ċˆ_j hiˆVˆ[ZIˆ XaXˆ hˆndjˆ aegdˆ\gˆ/bˆ i] ħˆkZghViˆzˆaˆiˆaˆXdb ej iZgidˆYˆheaˆ/nˆndjˆ gdlˆ cˆ b ZhhVˆ\Z#7nˆi] ZˆZcYˆd[i] ZˆhZhhˆċd!ˆndjˆ aˆ] VkZˆXgZˆViZYˆVˆhXglaˆċˆ\ˆcVb ZˆWYˆ\ZˆVcYˆ Vˆb Vcnˆ[VXZYˆWˆ\ˆ

Hj ↑WZˆ[dgVZˆ\ċcZgh#B ViZgVhˆXdhiˆv&ˆ \$eZghdcˆ[dgViˆVˆZˆ]db Zˆ8dYZˆ7j \ˆ#

iv. CODING WITH THE MICRO:BIT

I] Zˆ778ˆbˆ XgdˆMˆhˆVˆiˆċnˆegdˆ\gˆ/b bˆ VWZˆXdb ej iZgˆYZhˆ^ˆcZYˆidˆb Vˆ ZˆzVgcˆċ\ˆVcYˆ iZVX] ċ\ˆZVhnˆVcYˆ[j c#From making an interactive badge, hand-held electronic games or ‘fitbit’ style stepometers the options are extensive.

I] ħ I dg h] de ħ hj ↑WZˆ [dg VZˆ\ċcZgh# 7VhXˆiVˆZˆ]db Zˆ bˆ XgdˆMˆhˆVˆiˆċnˆ v&ˆ\$eZghdc#

v. OTTO ROBOTS

Diid`h`Vc`ciZg\Xi kZ`gdWdi`i] Vi`VcndcZ`XVc`b V` Z#`h`deZc`hdj gXZ!`[6gYj`cd](#)
 Xdb eVi`WZ`VcY` (9`egci`WZ!`i] Z`eZg`ZXi`deedgj c`↑n`id`Wj`W`VcY`] V`kZ`ndj gkZgn`[`ghi
 gdWdi!`zVgc`gdWdi`Xh`VcY`] V`kZ`[j c#`

C7#Diid`cZZYh`id`WZ` (9`egci`ZY`egdgid`i] Z`l dg h] de#l]`h`l dg h] de`h`YZVa[dg
 iZhi`c`V`cZl` (9`egci`Zgdg`Zii`c`l`id`g`eh`l` ↑]` (9`egci`c`V`cY`Za`Xi`gdc`Xh`Vi`i] Z`
 hVb Z`i`b Z#`

*I]`h`l dg h] de`h`hj`↑WZ` [dgi] dhZ`l]`d]`V`kZ`eā`hZY`l` ↑]`W`h`X`Za`Xi`gdc`Xh`VZ` [dgZ`#`
 :`V`X`Diid`~`↑`X`d`h`i`v`'`!`e`j`h` (9`egci`c`V`cY`X`d`h`i`h`V`k`V`ā`W`Z`dc`g`Z`f`j`Z`h`i`#`*

vi. VIRTUAL REALITY EXPERIENCE

AZY`W`h`dj`g`ZmēZgZcXZY`ij`idg`l`Z`l`ā`j`YZ`ndj`dc`i]`Z`j`hZ`d[`V`KG`=`ZVYhZi!`hZi`j`e
 [j`c`X]`Vā`Z`c`Z`h`VcY`i]`Zc`Z`i]`VcYh`dc`l` ↑]`ndj`gdl`c`K`g`j`VaGZVa`n`ZmēZgZcXZ`AZVgc
 id`j`hZ`Vc`DXj`ā`h`G`[i`KG`]`ZVYhZi` [dg`Vc`c`YZei]`KG`ZmēZgZcXZ`dg`Zc`dn`<dd`ā
 8Vg`Vā`Vg`!`l` ↑]`]`ZVYhZih` [dg`ndj`id`YZXdg`iZ`VcY`iV`Z`]`db`Z`#`Cdi`dca`h`i]`h`V`[j`c`
 ZmēZgb`Zci!`i]`h`l`dg`h]`de`XdkZgh`i]`Z`W`h`X`h`i]`gdj`l`id`eVg`X`eVi`dc`#`

*I]`h`l dg h] de`h`hj`↑WZ` [dg`VZ`l`c`Z`gh`id`ZmēZgZcXZY`j`hZgh`#`H`Z`h`h`d`c`i`b`c`h`VgZ`
 YZeZcYZci`dc`i]`Z`cj`b`VZg`d[`eVg`X`eVcih`VcY`i]`Z`KG`ZmēZgZcXZ`X]`dhZc`#`'`]`dj`g`
 hZhh`d`ch`X`d`hi`v`(%`VcY`c`X`j`YZ`i]`Z`j`hZ`d[`i]`Z`DXj`ā`h`G`[i`]`ZVYhZi`#`;`dg`<dd`ā
 8Vg`Vā`Vg`iV`Z`]`db`Z`]`ZVYhZih`!`l`Z`XVc`egk`YZ`i]`ZhZ`Vh`Vc`Zni`g`/`VY`"dc!`X`d`h`h`l`kZc`
 Vi`i`b`Z`d[`Vā`d`c`l`#`*

vii. COMPUTER GAME DESIGN

∞`i]`h`l`dg`h]`de!`ndj`ā`zVgc`]`dl`id`b`V`Z`ndj`gdl`c`[j`ā`[j`cXi`d`cVa`Xdb`ej`iZg`Vb`Z`
 [gdb`dj`gdch`↑Z`ZmēZgh`#`<Zi`ndj`g`XgZVi`kZ`YZVh`[ā`l`c`V`h`eā`n`c`l`dc`hdb`Z`l`gZVi`
 Vb`Z`ZmVb`eā`h`i]`Zc`V`f`j`X`hidgn`Wā`Vg`c`l`VcY`eā`cc`c`l`hZhh`d`c`l`ā`]`Zā`ndj`[cY`
 l`]`Vi`ineZ`d[`Vb`Z`ndj`Y`ā`Z`id`XgZVi`Z`#`L`Z`l`ā`gdc`dj`i`Vcn`egd`WZ`b`h`Wh`i`Zhi`c`l`ndj`g`
 Vb`Z`l` ↑]`i]`Z`l`g`j`e`VcY`l`]`Zc`ndj`g`Vb`Z`h`[c`h`]`ZY`!`l`Z`ā`egd`Z`Xi`V`ā`kZ`YZb`d`dc`dj`g`
 Wā`h`XgZc` [dgi]`Z`gZhi`d[`i]`Z`l`g`j`e`id`hZZ`#`l`]`ZgZ`V`k`V`ā`WZ`!`Vb`Zh`l`ā`WZ`ej`Wā`h`]`ZY`
 dca`c`Z`hd`ndj`XVc`Xdc`i`c`j`Z`id`eā`n`V`[iZgi]`Z`hZhh`d`c`]`Vh`ZcYZY`#`

viii. 3D HEAD SCAN AND PRINT

æ i] ð l dg h] de! ndj æ] V kZ ndj g] ZVY (9 hXVccZY VcY (9 egðciZY ð b ð V ij gZ id j hZ Vh V cZl ; VXZWd` egd[æ e Xij gZ! igð` Zi dc i] Z b VciZæ ZXZ! dgVh V` ZZehV` Z` L Z æ\ kZ ndj Vc dkZgk`Zl` dc (9 egðci ð\ VcY hXVccð\! Vædc\ l ↑] hdb Z` cdl æY\Z i] Vi`ndj `XVc`ign`Vi`] db Z#

6h (9 egðci ð\ ð V gZ`di kZan ædc\ egdXZhh! l Z æegðci i] Z] ZVYh VcY edhi i] Zb id ndj Vh`hddc`Vh`i] Zn`VgZ`gZVYn#

ix. CREATE YOUR OWN MIDI DEVICES

AZVgç] dl id XgZViZ ndj gdl c b Y^XdcigæZgh j hð\ 6gYj ðd dc i] ð] Vd`YVn ð) "] dj g l dg h] de`

8] gh 7Vææ6gYj ðd l dcYZg Yf] Vh j hZY 6gYj ðd ZmiZch`kZan id XgZViZ B >[VYZgh! ð/hZg] Vgèh! V kVgZin d[i] ZgZb ðh! VcY di] ZgVZhed` Z YZk`XZh#l] Z 6gYj ðd egd_ZXi] Vh Vg j \] i deZc hdj gXZ ZaZXigdc`Xh id i] Z b VhhZh! VYZY Wh ðh ædl egXZ VcY h`b eaX`n#`-] ndj Y a` Z id \Zi ðid j hð\ 6gYj ðd id XgZViZ b j h`XVa`chig b Zcih! i] ð ð i] Z`Xdj ghZ`[dgndj`

x. CREATIVE CODING WITH PROCESSING

AZVgç i] Z ?Vkv`WWhZY egd\gVb b ð\ ð/c\j V\Z EgdXZhhð\ dc i] ð [dj g] dj g l dg h] de! eZgZXi`[dg`Wdi] `Vg ði`X`VcY`ZYj XVi`ðcVæej gèdhZh# 8gZVi`kZ iZX] cdæ\`hi 8] gh 7Væal `æaiV` Z ndj i] gðj \] Væai] Z i] ð\h ndj cZZY id` cdl id`Zi`ndj `hiVgZY`l ↑] `EgdXZhhð\`VcY`ðh`b Vcn`VeeaXVi`ðch#

EgdXZhhð\`h deZc hdj gXZ hiVij h ZcXdj gVZh Vj YZcXZ eVg`X`èVi`ðc VcY YZkZædeb Zci! Vædl ð\ [dgV] j \Z aWVgn d[egd_ZXi h id YgVl ðhe`gVi`ðc [gdb! VcY V Xdb b j c`n`d[j hZgh`id`XdcigWY iZ`VcY`ej h] `i] Z`edhh`Wæf`Zh`d[i] Z`hd[i] l VgZ#

xi. IRL EMOJI CREATION 3D PRINTING AND/OR LASER CUTTING

Dc i] ħ il d] dj gl dg h] de ndj fāzVgç i] Z WWhX egčXēāzh d[(9 b dYZæč\ j hč\ [gZZ dcačZ hd[iil VgZ I ċ` ZgXVY# J hč\ i] Z Xj WZ iddā ndj fā WY ā V (9 b dYZa d[ndj g [Vkdj g↑Z Zb d_`" dg XgZViZ ndj g dl c` Ndj fā i] Zc Zmædg ndj g[āZ id WZ egč iZY j hč\ J ā ħ V` Zg (hd[iil VgZ " 8j gV#I] Z B VY; WAWWiZVb I ā i] Zc egč i] ZhZ [dgndj id XdāZXi`VcY`eV`ci#

Ndj fāVāhd \Zi i] Z X] VcXZ id ā/hZgXj i ndj gZb d_`dcid eanl ddY dgeZgheZmj hč\ (9 haXč\ hd[iil VgZ ; j hčc (+% HaXZg#I] ħ egdXZhh haXZh ndj g dg\ čVa (9 b dYZa [dg ā/hZgXj ii č\ "" j hi`ā`Z` (9`egč i č\`hd[iil VgZ`8j gV#

6āiegXZh`VgZ`ZnXj hKZ`d[`K6I #

3 RASPBERRY PI

6ãdj gGVheWZgn'E ʹl dg h] deh˘Vgž'ivj \] ij hč\`i] Z'E ʹl de˘8: : 9!˘VæZfj ʹeb Zci˘XVc
WZ˘hj eeaZY ˘Wh˘B VYAVW#



i. CODING MUSIC

AZVgç'ıd˘XdYZ˘XgžVi kZan˘dc'i] Z˘GVheWZgn'E ˘Wh˘Xdb edhč\`dgeZgdğb č\`b j h˘X˘č˘Vc
čXgžY˘Wž˘gvc\Z˘d[˘hinažh˘

Hj ʹWž [dgVZ\ čcZgh#] Zgž ˘hıcd˘b VıZgVáXdhi [dgj eıd˘ ˘%eVg ˘XeVcih#

ii. HACKING MINECRAFT

: meadg`i] Z`k`g`j Val dga`d[`B` cZXgV[i`E`!`VcY`j hZ`E`ni] dc`id`b Vc`ej a/iZ`i] Z`l dga`
Vgdj cY`ndj #

AZVgc`id`iZaZedg!`hZi`WdX`h`l` ↑]`c`i] Z`B` cZXgV[i`L` dga`!`zV`kZ`V`igV`ad`[`adl` Zgh`Vh`ndj
l`V`a`!`Wd`l`j`e`]j` \Z`l`C`l` WdX`h`dc`Xdb`b`VcY`!`[adl` a`kV`!`VcY`XgZ`ViZ`ndj`gkZgn`dl`c`
l`]`VX`V`WdX` \Vb`Z`

Hj ↑WdZ [dgVZ\ ccZgh#] Zg`h`cd`b ViZgVaXdhi [dgj e`i`d` %eVg`X`eVcih#

iii. PROGRAMMING SCRATCH

L` ↑]`HXgViX`!`ndj`XVc`egd`g`b`ndj`gd`l`c`ci`ZgVXi`kZ`hidgZh`!\`Vb`Zh`!`VcY`Vc`b`Vi`dch`
VcY`h`VgZ`ndj`gXgZ`Vi`dch`l` ↑]`di]`Zgh`c`i]`Z`dca`cZ`Xdb`b`j`c`↑n`#

l`]`h`l`dg`h]`de`iZVX]`Zh`[j`cYVb`ZciVaXdY`c`\`XdcXZeih`hj`X]`Vh`hZfj`ZcX`c`\`
gZeZi`↑`dc`!`kVgVWZ`h`hZaXi`dc`VcY`deZgVidgh`#

Hj ↑WdZ [dgVZ\ ccZgh#] Zg`h`cd`b ViZgVaXdhi [dgj e`i`d` %eVg`X`eVcih#

iv. PHYSICAL COMPUTING WITH SCRATCH

J`hZ`HXgViX`id`Xdciglai]`Z`<`E`D`e`ch`dc`V`GVheWZgn`E`#8gZ`ViZ`h`b`eaZ`X`gXj`↑`h`id`
[a/h]`Vc`A`9`VcY`XdciglaV`igV`[[`X`a`]`i`h`nh`iZ`b`#

Hj ↑WdZ [dgVZ\ ccZgh#] Zg`h`cd`b ViZgVaXdhi [dgj e`i`d` %eVg`X`eVcih#

v. GAME DEVELOPMENT IN SCRATCH

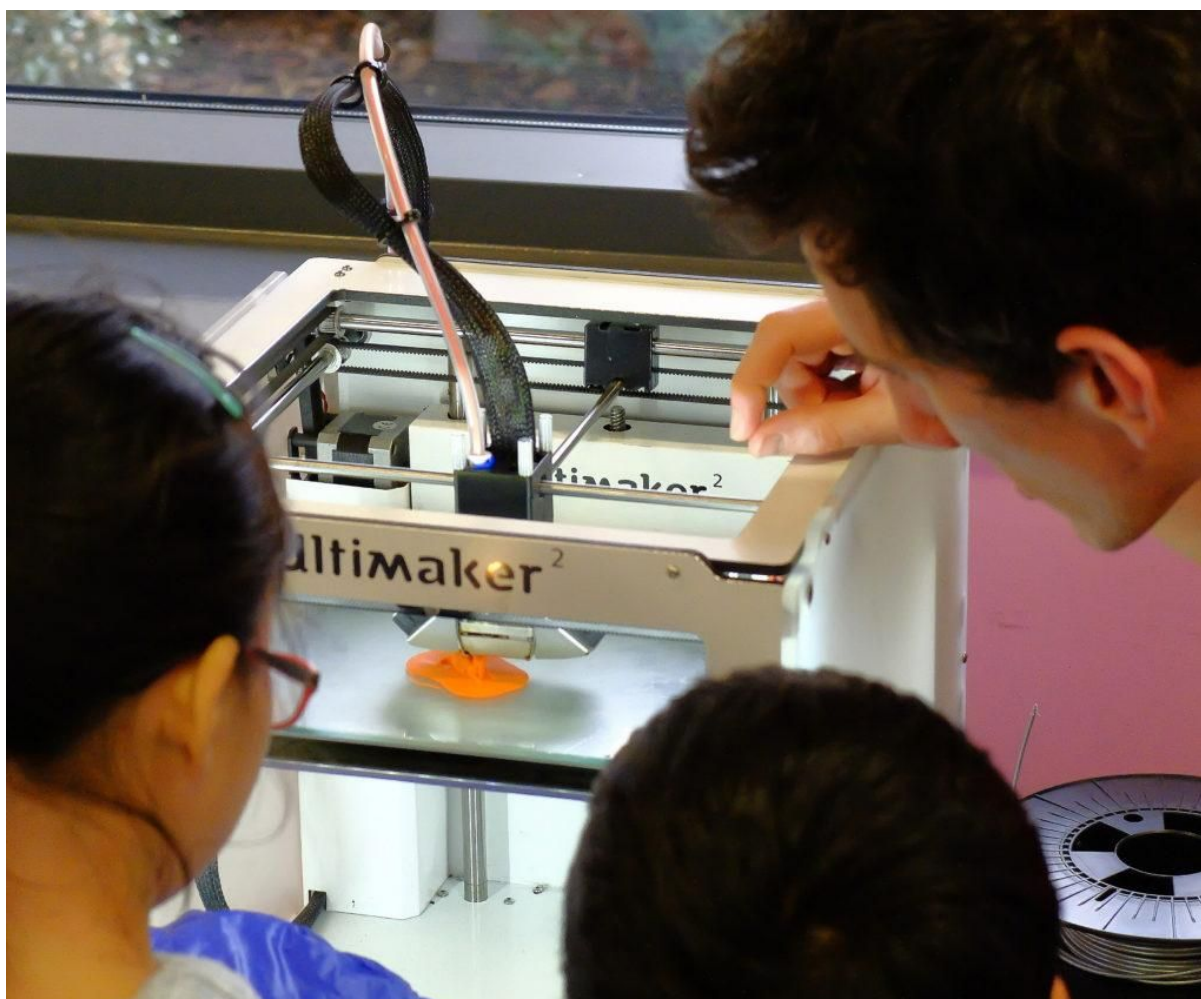
Ej`i`ndj`g`W`h`X`XdY`c`\`h`ah`c`id`egVXi`XZ`id`XgZ`ViZ`\`Vb`Zh`c`HXgViX]`dc`i]`Z`
GVheWZgn`E`#

*Hj ↑WdZ [dg aZVgcZgh VagZVyn Xdb [dgWdZ l` ↑]`W`h`X`XdY`c`\`XdcXZeih`c`HXgViX]`#`
l`]`Zg`h`cd`b ViZgVaXdhi [dgj e`i`d` %eVg`X`eVcih#*

6aiegXZhVgZ`ZnXj`h`kZ`d`[`K6l`#

4 SCIENCE AND DIGITAL MAKING

HZI VcY eV^ci ZaXigdc^Xh dg\Zi b Zhnl ↑] e] nh^Xh!dj ghX^ZcXZ VcY Y^↑Vab V^ c\ l dg h] deh^d[[ZgV^]j c!^VaZgc^Vi kZ^Veegd^VX] ^id^hX^ZcXZ^VcY^iZX] cdad\n#



i. SCIENCE BUSKING

Dj ghX^ZcXZ^YZb dchig^i^dch^j hZ^h^b eā^ZkZgn^YVn^c\g^ZY^Zcih^id^XdcYj Xi ZmēZgb Zcih^i] Vi^l dl "

<Zi^] VcYh^dc^l ↑] ^Zc^c^ZZgc^c^dgb Zhnl ↑] e] nh^Xh#L ↑] ^V^d^g^Z^g^c^V^Z^d^ ZnZg^hZh^l Z^XVc^iV^adg^ZVX] ^hZh^h^dc^id^ndj gg^fj g^Zb Zcih#

Hj ↑WāZ^]dgVZ^c^Zgh^V^ZY^+z^#HX^ZcXZ^ ^h^hi^Vj^]g^lb v^&^%^[dgj e^i^d^*^%eZdeaZ^#

ii. 3D PRINTING DEMO

Ndj kZ] ZVgY VæVWdj i i] Zb !cdl hZZdcZc VXi dc D] g(9°egciZgI æWZg cc c\ Væ YVn! Xdb ZI ViX] VcYb VnVZiV Z] db Zndj gdl c(9°egciZYb c^b VhXdi#

Hj 1WæZ [dgVZ\ ccZgh#v+%b VX] cZ gZciVa" YZb d 1Zb h I æVZ \ kZc M Vn#: VX] 1Zb iV Zh(%"+%b cj iZhīd°egci#

iii. WEARABLE TECH

: meadgZi] Z[j ij gZd[[Vh] dc VcYiZX] cdæ\ nVcY YZh^c ndj gdl c iZX] idiZ VW\#c V ' "] dj ghZhhdc ndj æXdc hīg Xi VhZI c XgXj 1!hZI 1 1] XdcYj Xi kZi] gZVY VcYb V Z ndj gA: 9h^a\ i] j e1] æZ] Vkc\ idchd[[j c Væc\ i] Z1 Vn"

Hj 1WæZ [dgVZ\ ccZgh#B ViZgVh Xdhi v. %\$(%eZghdc \ gj] e#

iv. CONDUCTIVE PAINT

< Zi XgZVi kZ VcY Wgc\ id a[Z V Xda WdgVi kZ XVckVh d[Vg fi a\] i#J h c\ b V\ cVi dc id YgVl h b eZ b V Z d[ndj gX] d XZ! i] æZ æVgc c\] dl id c Xdgedg Vi Z V W i i Z g VcY A: 9 id Xdb eZ i Z V X gXj 1! VYY c\ hdb Z il c æ id ndj ge Xij gZ#

Hj 1WæZ [dgVZ\ ccZgh#B ViZgVh Xdhi v & % \$(%eZghdc \ gj] e#

6æiegXZh VgZ ZnXj h kZ d[K6I #

5 PATTERNCRAFT

EViiZgc8gV[i`h`Vc`VcVad\j Z`id`Y^`fVaej cX] `XVg`g`VYZgi] Vi`iZVX] Zh`i] Z
 [j cYVb ZciVh`d[`egd\g/b b `e\`VcY`ZcXdY`e\`YViV`i] g] \ ` i] Z`i g`fZ`dcXZ`b ZY`f b `d[
 V`e] nh`XVaej cX] ZY`XVg`#

L `f] `ac` h`id`Wc`Vgn`VcY`i] Z`Xdb ej i`e\`Xj ggXj a b `Vh`V`l] daz!`EViiZgc8gV[i`h`V`Xgdhh
 Xj ggXj a`i`dda`i] Vi`XVc`WZ`j hZY`[dg`e`i] Z`hj eedg`d[`HI : B `VXi`k`f`Zh`VcY`hj eedg`hd[i
 h` `aeYZkZadeb Zci`e`VgZVh`d[`XgZVi`k`fn!`egdWZb `hdak`e\`iZVb `l dg`e\`VcY
 Xdb b j c`XVi`dc`#

9Zh`cZY`VcY`XgZViZY`Wh`<Zb b V`B Vn`AVi] Vb !`Vc`Vg`hi`VcY`b V` Zg`<Zb b V`h
 `ciZg`hiZY`e`i] Z`gZa`i`dch] `eh`WZil ZZc`iZm`zh`VcY`XdY`e\`#`=V`k`e\`dca`hiVgZY`id
 aVgc`id`XdYZ`e`" %&!`<Zb b V`ZcYZVkdgh`id`YZkZade`VXXZhh`WZ`b Zi] dYh`[dg
 j cYZghiVcY`e\`XdYZ`VcY`Xdb ej i`e\`i] Zdg`#

L Z`d[[ZgV`l `YZ`gVc`Z`d[`l dg h] deh`j h`e\`EViiZgc8gV[i`YZiV`aeY`WZadl #



i. BINARY MINECRAFT ANIMATION

: mædɔʒ] dl ʷcVgnʷViVʰj hZY idʰhidɔʒ ʰb V\Zhʰcʰi] Z [dɔb d[ʰhʷcYʰ&hʷcYʰXɔʒViZ
 ʰb V\ZhʰcʰB cZXɔʒ[i j hʰcʰej cX] ʰXVɔʒhʰ#; dædl cʰ\i] ʰcʰigɔʒj Xi ʰdcʰæVɔʒZɔhʰl ʰæi dg
 cʰ\ɔʒj ehʰidʰYZhʰcʰVcYʰegɔʒ\ɔʒb ʰVcʰ- mʰ ʰ 9ʰVcʰb Vi ʰdcʰcʰB cZXɔʒ[i #6YkVcXZY
 æVɔʒZɔhʰl ʰæi VkZʰi] Zʰdeedgj cʰʰnʰidʰZmædɔʒʰi] ZʰE ni] dcʰXdYʰcʰ\ WZ] cʰYʰi] ZʰegɔʒZhh
 VcYʰb Vʰ ZʰX] Vcʰ\Zhʰidʰi] ZʰɔʒVcʰb Vi ʰdcʰʰhʰZYʰʰcʰ\i] ZʰXdYZ#

Hj ʰWZ [dgZkZgndcZ#B ViZgVhʰXdhʰi v&\$eZgndc#

ii. ENCODING DATA

J hZ ej cX] XVɔʒh id Zmædɔʒ] dl ʷcVgn ʰj hZY id hidɔʒ YViV cʰi] Z [dɔb d[ʰhʷcYʰ &#
 eVɔʒ XʰeVcih l ʰæWZ æVɔʒ] dl id XdckZɔʒ YZcVgn cʰj b WZɔʒ id ʷcVgn VcY ZcXdYZ VcY
 YZXdYZ cʰj b WZɔʒ j hʰcʰ\ B cZXɔʒ[i Wj ʰhʰ#l] Z \ɔʒj e l ʰæi] Zc egɔʒ\ɔʒhh id XɔʒVi cʰ\
 b ZhhV\Zh j hʰcʰ\ i] Z VhXʰVæ] VWZi VcY j hZ ej cX] XVɔʒh id b Vʰ Z iZmi VeeZVgdc
 hXɔʒZc#

Hj ʰWZ [dgZkZgndcZ#B ViZgVhʰXdhʰi v&\$eZgndc#

iii. PATTERNBEATS

: mʰv b cʰcʰ\i] ZʰegcʰXʰæzhʰd [j hʰcʰ\ ʰhiZeʰhZfj ZcXZɔʒ ʰhʰcʰhig Xi ʰdchʰ [dɔʒeʰnʰcʰ\ WʰXʰ
 b j hʰXʰæVɔʒZɔhʰl ʰæj hZ ʰWcVgnʰidʰegɔʒ\ɔʒb ʰb VX] cʰZhʰiZb edʰVcYʰhdj cʰYhʰcʰi] Z
 XɔʒVi ʰdcʰd [ʰWhʰXʰb j hʰXʰdb edhʰʰdchʰ#; dædl cʰ\i] ʰhʰi] Z \ɔʒj e l ʰæWZ ʰcʰigɔʒj XZYʰid
 8HHʰXdYʰcʰ\ VcYʰj hZʰʰidʰXj hidb ʰhZʰi] ZʰVeeZVgVcXZʰd [i] ZʰEViiZɔʒ 7ZVihʰ6eeʰXVi ʰdcʰ#

Hj ʰWZ [dgZkZgndcZ#B ViZgVhʰXdhʰi v&\$eZgndc#

iv. PATTERNCRAFT & 3D PRINTING

J hZʰi] ZʰEViiZɔʒ 8ɔʒ[i ej cX] XVɔʒ ɔʒVYZɔʒVcYʰB cZXɔʒ[i idʰWj ʰhʰ (9ʰhig Xij ɔʒhʰdcZʰdʰnZɔʒ
 Vi Viʰb Z#AZVɔʒZɔhʰl ʰæYZXdchig Xi (9ʰb dYZʰhʰidʰj cYZɔʒiVcYʰ] dl Vʰ (9ʰegcʰiZɔʒ
 egɔʒZhhZhʰ (9ʰ [ʰzhʰWZ [dgʰegcʰi cʰ\#l] ʰhʰ dg h] deʰXVcʰWZʰXdb WcZYʰl ʰ] i] Z
 B cZXɔʒ[i l j ɔʒzhʰHZhhʰdc#

Hj ʰWZ [dgZkZgndcZ#B ViZgVhʰXdhʰi v&\$eZgndc#

v. PROGRAMMING TURTLES

J hZ`ej cX] XVgYh`id`egd\g/b `V`hZi`d[`chig Xi`dch`[dgi] Z`b dkZb Zcih`d[`V`B `cZXgV[i ij g`aZ`h`b j`a/i`dc#: meadgZ`] dl `i] Z`e] nh`XVaej cX] XVgY`h`gZegZhZciVi`kZ`d[`V gZeZViVWZ`egd\g/b `i] Vi`XVc`WZ`addeZY#l] Zc`j hZ`l] Vi`h`WZc`aZVgci`id`egZY`Xi`V hZfj ZcXZ`d[`chig Xi`dch`VcY`hd&kZ`X] VaZc\Zh`c`i] Z`\Vb Z#

Hj ↑WZ`[dgZkZgndcZ#B ViZgVh`Xdhi`v&\$eZgndc#

vi. INFRARED CIRCUITS

7Z\`c`c`\`l` ↑] `Vc`ci`gdYj Xi`dc`id`E`ViiZg`8gV[i]`eVg`X`eVcih`l` `aib`V`Z`V`ej`cX] `XVgY`VcY`hZZ`i] Z`gYViV`igV`cha/iZY`cid`V`B `cZXgV[i`WY`aY`#l] Z`\gdj`e`l` `ai] Zc`ZmeadgZ`] dl i] Z`gZVYZg`l` dg`h`l`WY`aY`c`\`c`[gVgZY`YZiZXidg`j`h`c`\`h`b`e`aZ`Xdb`edcZcih`VcY ZaXi`gd`c`X`eglidine`c`\`WdVgY`h`#l] Zn`l` `aWZ`ZcXdj`g\ZY`id`iZhi`i] Z`YZiZXidg`j`h`c`\ Y`↑[ZgZci`ej`cX] XVgY`b`ViZgVh`VcY`kVgn`c`\`] d`aZ`h`bZh`VcY`YgM`i] Z`gX`gXj`↑h`j`h`c`\ gZXd\`c`hZY`hnb`Wd`h`#

Hj ↑WZ`[dgZkZgndcZ#B ViZgVh`Xdhi`v&\$eZgndc#

vii. ENGINEER YOUR OWN READER

DkZgV`hZgZh`d[`l` ZZ`h`l`aZVg`c`] dl `i] Z`gZVYZg`l` dg`h`j`h`c`\`c`[gVgZY`A: 9h`VcY e] didigV`ch`hidg`#AZVg`Zgh`l` `ai] Zc`WZ`X] VaZc\ZY`id`YZh`^`c`VcY`XgZViZ`V`] dj`h`c`\`[dg i] Z`X`gXj`↑h`i] Vi`l` `aVadl` `[dgXVgYh`id`WZ`gZVY`gZaVW`h`#l] `h`l` dj`a`WZ`WZhi`hj`eedgZY l`↑] `a/hZgXj`ii`c`\`VcY`(`9`eg`ci`c`\`l`] ZgZ`V`kV`a`WZ`#

Hj ↑WZ`[dgX]`aYgZc`V\ZY`ZkZgndcZ#B ViZgVh`Xdhi`v&\$eZgndc#

6aiegXZh`VgZ`ZnXj`h`kZ`d[`K6l`#

6 ADDITIONAL INFORMATION

I] Z Yj gVi ċdc d[i] Z I dg h] de Xvc WZ iV'adgZY id hj ↑ ndj ggZfj ġZb Zcih! i] Z b ċ' b j b [dgZVX] WZ ċ\ dcZ] dj g#B Vcn Xvc WZ VggVc\ZY Vh V Ygde"ċ hZhhċdc id g c I ↑] ċ V ā\g\ZgZkZci!dgVhV'eVX` V\Z'd[! dg h] deh#

; VX'afVidgi b Zh ċXā YZ igVkZā hZij e VcY XāVgċ\ Ydl c#9gde"ċ I dg h] deh g c [dgV āZc\i] d[i b Z d[ndj gX] ddhċ\#EāVhZ VādI dcZ"] dj g[dghZij e VcY (%b ċj iZh [dg XāVgċ\ Ydl c#EāVhZ Vāhd cdiZ [VX'afVidgXdhih VgZ ċ VYY↑ċdc id Vcn b ViZgVaXdhih! YZeZcYVci`dc'i] Z`cj b WZgd[[VX'afVidgġZfj ġZY`VcY'i] Z`āZc\i] `d[VXi k↑n#

J caZhh di] Zg ħZ heZX↑ZY! Xdb ej iZgh\$ā/eideh VgZ cdi egdkYZY! i] ZhZ I dj ā cZZY id WZ b VYZ VkvāWZ Wh i] Z kZcj Z dgegkYZY Wh i] Z āVgZg#L Z I dj ā Vāhd ġZfj ġZ i] Z`kZcj Z`id`] VkZ`deZc`VXXZhh`id`[gZZ' I ↑#

L dg h] deh dj ihYZ d[<gZViZg B VcX] ZhiZg b Vn Vāhd ċXā YZ igVkZā VcY VXXdb b dYVi ċdc`Xdhih#6āēgXZh`VgZ`ZnXā h`kZ`d[`K6I #

