

MadLab

Innovation Workshops Brochure

Winter/Spring 2019



CONTENTS:

1. MISSION

2. ELECTRONICS

^^^^^AZVg`id`HdaZg
 ^^^6g`j`cd
 ^^^<Zi`i]Z`7j`\[dg`8dY`c`l`i`↑]`8dYZ`7j`\
 k`^^8dY`c`l`i`↑]`i]Z`b`XgdMM
 k`^^Diid`GdWdih
 k`^^K`g`j`VaGZVafn`: mæZgZcXZ
 k`^^8db`ej`iZg<Vb`Z`9Zh^c
 k`^^^(9`=ZVY`HXVc`VcY`Eg`ci
 ^m`8gZViZ`Ndj`gDI`c`B`>9Zk`XZh
 m`8gZVi`kZ`8dY`c`l`i`↑]`EgdXZhh`c`\
 m`^(9`Eg`ciZY`: b`d_h
 m`^(9`AVhZg8j`i`: b`d_h
 m`^æ`igd`id`A`kZ`K`hj`Vah`J`h`c`\
 K9B`M

3. RASPBERRY PI

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

4. SCIENCE & DIGITAL MAKING

^^^^^HXZcXZ`7j`h`c`\
 ^^^^(9`Eg`ci`c`l`9Zb`d
 ^^^L`ZVg/WZ`I`ZX]
 k`^^8dcYj`Xi`kZ`EV`ci

5. PATTERNCRAFT

^^^^^7`c`Vgn`B`c`ZXg/[i`6c`b`Vi`dc
 ^^^: cXdY`c`l`9ViV
 ^^^E`ViiZg`7ZVih
 k`^^E`ViiZg`Xg/[i`fi`^(9`Eg`ci`c`\
 ^^^^^k`^^Egd`g/v`b`b`c`l`i`j`g`zh
 k`^^æ`[g/v`gY`8`gX]`↑h
 k`^^: c`l`c`ZZg`ndj`g`dl`c`GVVYZg

6. ADDITIONAL INFORMATION

1 MISSION

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

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

B VYAVWWhd`i dg h`dc`WZ] Vq`d[`dg\`Vc`hVi`dch!`hX] ddh!`æXVaXdj cX`h! i] gY`hZXidgVcY`XgZVi`kZ\$`iZX] `dg\`Vc`hVi`dch!`id`YZakZgb V` æ\`VcY`Y^↑VaXdj ghZh`id`i] Z`gj hZgh#

B VYAVWWh`XgZVi`kZ`i dg h] deh`VgZ`eZg[ZXi`[dgXdc`i`æj ZY`egd[Zhh`æcVa YZkZædeb Zci`VcY`XVc`WZ`iV`ædgY`[dgiZVX] Zgh`VcY`ZYj XVI`æcVa egd[Zhh`æcVh`iZVX] æ\`Vi`Vcn` Zn`hiV\Z`æZkZæ#

EgZk`dj h`XaZcih`æXq YZ/6gh`8dj cX`æ: c\`æ/cY!`; j ij gZ: kZgni] æ\`!`?V\j Vg AVcY`GdkZg`i] Z`EgæcXZ h`i g hi!`i] Z`L ZæXdb Z`i g hi!`CZhiV!`i] Z`Cdb æZi l g hi!`i] Z`J c`kZgh`n`d[`B VcX] ZhiZg`B VcX] ZhiZg`B Zig`leda`æVc!`7g^] iZg Hdj cYh!`L] ↑l dg] `6g`<VæZgn!`B VcX] ZhiZg`8`n`8dj cX`æ`VcY`?d] c`AZI` h`#

FACILITATOR COSTS: v(*% [dgV [j æYVn æ- "] dj ght \$ v' %% [dgV] Vq YVn l) "] dj ght ""6æiegXZh`VgZ`ZmXq h`kZ`d[`K6l #

Contact us:

Zb V`æ/ [æZVgæ5 b VYæ/W#dg`#`](#)
il ↑iZg/ 5 b VYæ/Wj`
e] dcZ/ ž)) lææ, - .) " , -) - ,
VYYgZhh/ B VYAVW5 `Da`7Vc` `7j æY`æ\`= VcdkZg`Hi`gZzi!`B VcX] ZhiZg B +%%6:

2 ELECTRONICS



i. LEARN TO SOLDER

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

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

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

ii. ARDUINO

6gj ċdXVcWZj hZYidb V ZVaa ċYhd[i] ċ\h![gdb iċn! ZVgWZhıd'a/gZ"hxVā ċiZg\Xi kZċhiVā/i ċdch#KZghVi āZ!WZ\ċcZg'[gZcYan!VcYVWdkZVāi[j c!i] ħ! dg h] de l ā\kZındj Vcċch^] iċcid] dl id\ZiċhiVgZY! ↑]ındj gdl cZnXZāZci Y^↑Vāe] nhXVāegd_ZXi h#

Hj ↑WZ [dgVZ\ ċcZgh#7VhXiV Z] db Z 6gj ċd ħhX] VgZYVi v+' \$eZghdc#

iii. GET THE BUG FOR CODING WITH CODE BUG

6[j cVcYZc\V\ ċ\ċigYj Xi ċdċidZVhnYg\ "VcY"Ygdeċegd\g/b b ċ\VcY ZāXi gdcXh#8dYZ7j \ ħV" B VcX] ZhiZgWdgcċ↑Vi kZ!YZh^cZYVhV" [j cVcYZc\V\ ċ\ ċigYj Xi ċdċidYg\ VcY Ygdeċegd\g/b b ċ\VcY ZāXi gdcXh#

ċ_j hiV"[Zi XaX ħındj āegd\g/b i] ħkZghVi āZāiāXdb ej iZgidYċheā/nındj gdl c b ZhhV\Z#7nı] ZZcYd[i] ZċhZhċdċındj āi] VkZXgZViZYVċhXgāċ\ċVb ZWY\ZVcY Vb Vcn"[VXZYW \

Hj ↑WZ [dgVZ\ ċcZgh#B ViZgVhXdhı v& \$eZghdc [dgViV Z] db Z 8dYZ 7j \#*

iv. CODING WITH THE MICRO:BIT

I] Z 778b XgdMċċhVi ċnċegd\g/b b VWZ Xdb ej iZgYZh^cZYıd'b V ZāVgcċ\VcY iZVX] ċ\ZVhnVcY[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 ↑WZ [dg VZ\ ċcZgh# 7VhX iV Z] db Z b XgdMċ ċ ħh Xdhi v&\$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`XgZ`Zc`[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`h`Zhh`d`c`]`Vh`ZcYZY`#`

viii. 3D HEAD SCAN AND PRINT

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

6h (9 egçci ç\ h V gZ`/i kZan ædc\ egdXZhh! l Z æegçci i] Z] ZVYh VcY edhi i] Zb id ndj Vh`hddc`Vh`i] Zn`VgZ`gZVYn#

l] h`i dg h] de`h`Vhd`Vkv`æ/VæZ`id`Yd`ç`eV`gh#

ix. CREATE YOUR OWN MIDI DEVICES

AZVgç] dl id XgZViZ ndj gdl c b Y`XdciglaZgh j hç\ 6gY çd dc i] h] Va`YVn t) "] dj g l dg h] de`

8] gh 7Væ t6gY çd l dcYZg Y l] Vh j hZY 6gY çd ZmZch`kZan id XgZViZ B >[VYZgh! ð/hZg] Vgçh! V kvgZin d[i] ZgZb çh! VcY di] ZgVZhed` Z YZk`XZh#l] Z 6gY çd egdZXi] Vh VgYj \] i deZc hdj gXZ ZæXigdc`Xh id i] Z b VhhZh! VYZY Wh ↑h æl egXZ VcY h`b eaX↑n#`-] ndj Y æ` Z id \Zi çid j hç\ 6gY çd id XgZViZ b j h`XVa`çhig b Zcih! i] h`h i] Z`Xdj ghZ`[dgndj`

x. CREATIVE CODING WITH PROCESSING

AZVgç i] Z ?Vkv`WWhZY egd\gV/b b ç\ ð/c\j V\Z EgdXZhhç\ dc i] h [dj g'] dj g l dg h] de! eZgZXi`[dgVdi] `Vg`hi`X`VcY`ZYj XVi`dcVæej gedhZh# 8gZVi`kZ iZX] cdæ\`hi 8] gh 7Væ l `æaiV` Z ndj i] gYj \] Væi] Z i] ç\h ndj cZZY id` cdl id`\Zi`ndj`hi`VgZY`l` ↑] `EgdXZhhç\`VcY`↑h`b Vcn`VeeaXVi`dch#

EgdXZhhç\`h deZc hdj gXZ hiVij h ZcXdj g\Zh Vj YZcXZ eVg`X`eVi`dc VcY YZkZæeb Zci! Væd ç\ [dgV] j \Z æVgnd[egdZXih id YgVl çhe`çVi`dc [gdb! VcY V Xdb b j c`n`d[j hZgh`id`Xdcig`WY iZ`VcY`ej h] `i] Z`edhh`Wæ`Zh`d[i] Z`hd[il VgZ#

xi. 3D PRINTED EMOJIS

Dc`i] h`il d`] dj gl dg h] de`ndj aãZVgc`i] Z`WhX`egcX`eãZh`d[(9`b dYZæc`j h`c` \ [gZ`dcaçZ`hd[i]l VgZ`i c` ZgXVY#J h`c` \i] Z`Xj VZ`idda`ndj aãVj aã`V(9`b dYZád[`ndj g [Vkdj g†Z`Zb d_`^ `dgXgZViZ`ndj gdl c`Ndj aãi] Zc`Zmædg`ndj g[ãZ`id`VZ`egc`iZY`j h`c` \ J á b V` Zg(`hd[i]l VgZ` `8j gV#l] Z`B VY; VVAVWiZVb `l aãi] Zc`egc`i] ZhZ`[dgndj `id XdaãZXi#

l] h`Xdj ghZ`h`hj ↑VWZ`[dgVãVWaf`Zh!`VcY`l Z`l Zaãdb Z`WZ`c`cZgh`l ↑] `cd`egZk`dj h ZmæZgZcXZ#6aãb ViZgVh`VcY`Zfj `eb Zci`l aãVZ`egdk`YZY`dc`i] Z`YVn#

xii. 3D LASER CUT EMOJIS

Dc`i] h` #`] dj gl dg h] de!`ndj aãZVgc`i] Z`WhX`egcX`eãZh`d[(9`b dYZæc`j h`c` \ [gZ`dcaçZ`hd[i]l VgZ`i c` ZgXVY#J h`c` \i] Z`Xj VZ`idda`ndj aãVj aã`V(9`b dYZád[`ndj g [Vkdj g†Z`Zb d_`^ `dgXgZViZ`ndj gdl c`Ndj aãi] Zc`VZ`c`igdlYj XZY`id`HaXZg`V`b dYZæc` \ hd[i]l VgZ`i] Vi`l aãegZeVgZ`ndj gb dYZaid`VZ`ã/hZgXj i`VcY`VhhZb WZ`Y`c`hiVX`ZY haXZh#

l] h`Xdj ghZ`h`hj ↑VWZ`[dgVãVWaf`Zh!`VcY`l Z`l Zaãdb Z`WZ`c`cZgh`l ↑] `cd`egZk`dj h ZmæZgZcXZ#6aãb ViZgVh`VcY`Zfj `eb Zci`l aãVZ`egdk`YZY`dc`i] Z`YVn#

xiii. INTRO TO LIVE VISUALS USING VDMX

l] h`+`] dj gl dg h] de`l aãc`igdlYj XZ`ndj `id`i] Z`WhXh`d[i] Z`akZ`k`YZd`b Vc`ej a/i`dc hd[i]l VgZ`!K9B M#EVg`X`eVcih`l aãZVgc`i] Z`c`iZgVXZ!`] dl `id`b h`mk`YZdh`VcY`Veean Z[[ZXi h!`Vh`l ZaãVh`i] Z`Vg`hi`X`egcX`eãZh`d[akZ`k`YZd`eZgdgb VcXZ#l] h`egdXZh`h`h` Vãhd`V`gZVi`ZmæZgb ZciVãl Vn`d[`b V` c` \Vj Y`d`k`hj Vãe`ZXZh`l ↑] dj i i`b Z`Xdchj b c` \hd[i]l VgZ`#

l] h`l dg h] de`h`V`b ZY`Vi`eZdeaZ`l ↑] `cd`egdg` cdl aãY`Z`d[K9B M#EVg`X`eVcih`l aã cZZY`id`VZ`Xdc[YZci`l ↑] j h`c` \Xdb ej iZgh!`VcY`egZ[ZgVh`l ↑] V` cdl aãY`Z`d[b j h`X`VcY`\$dgk`YZd`hd[i]l VgZ`#

6aãegXZh`VgZ`ZnXj h`kZ`d[K6l

3 RASPBERRY PI

6ãdj gGVheWZgn'E ʹl dg h] deh˘Vgž'ivj \] i j hĉ\`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 edhĉ\`dgeZgdğb ĉ\`b j h˘X˘ĉ˘Vc
ĉXgžY˘Wž˘gvc\Z˘d[˘hinažh˘

Hj ʹWž [dgVZ\ ĉcZgh#1] Zgž ˘hıcd˘b VıZgVáXdhi [dgj e ıd˘ ˘%eVj ˘XeVcih#

ii. HACKING MINECRAFT

: meadg`i] Z`k`g`j Val` dg`d`[`B` c`ZXgV[i`E`!`VcY`j` hZ`E`ni] dc`id`b` Vc`ej` dViZ`i] Z`l` dg`
Vgdj` cY`ndj` #

AZVgc`id`iZ`edg!`hZi`WdX` h`l` ↑]` c`i]` Z`B` c`ZXgV[i`L` dg`!`zV`kZ`V`igV`ad`[`adl` Z`gh`V`h`ndj`
l` V`a`!`W`d`l` j`e`]`j` \`Z`l` C`l` W`dX` h`dc`X`db` b` VcY`!`[adl` a`kV`!`VcY`X`gZ`ViZ`ndj` g`kZ`gn`dl` c`
l`]`VX`V`W`dX` \`V`b`Z`

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

iii. PROGRAMMING SCRATCH

L` ↑]` H`X`g`Vi`X`!`ndj` X`Vc`e`gd`g`b` `ndj` g`dl` c`c`i`Z`g`V`i`k`Z`h`i`dg`Z`h`!`V`b` Z`h`!`VcY`Vc`b` Vi`d`ch`
VcY`h`] VgZ`ndj` g`X`gZ`Vi`d`ch`l` ↑]` d`i]` Z`gh`c`i]` Z`d`ca`c`Z`X`db` b` j` c`↑`n`#

l`]` h`l` dg`h]` de`i`Z`V`X`]` Z`h`j` c`Y`V`b` Z`ci`V`a`X`d`Y`c` \`X`dc`X`Z`ei`h`h`j` X`]` V`h`h`Z`f`j` Z`c`X`c` \`!
g`Z`e`Z`i`↑`d`c`!`k`V`g`V`W`Z`h`!`h`Z`a`X`i`d`c`VcY`deZgVidgh#

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

iv. PHYSICAL COMPUTING WITH SCRATCH

J`h`Z`H`X`g`Vi`X`]` i`d`X`dc`i`g`l`a`i]` Z`<`E`D`e`c`h`d`c`V`G`V`h`e`W`Z`gn`E` #`8`gZ`ViZ`h`b` e`aZ`X`g`j` ↑`h`i`d`
[d`h`]` Vc`A`:` 9`VcY`X`dc`i`g`l`a`V`i`gV`[[`X`a` \`]` i`h`n`h`i`Z`b` #

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

v. GAME DEVELOPMENT IN SCRATCH

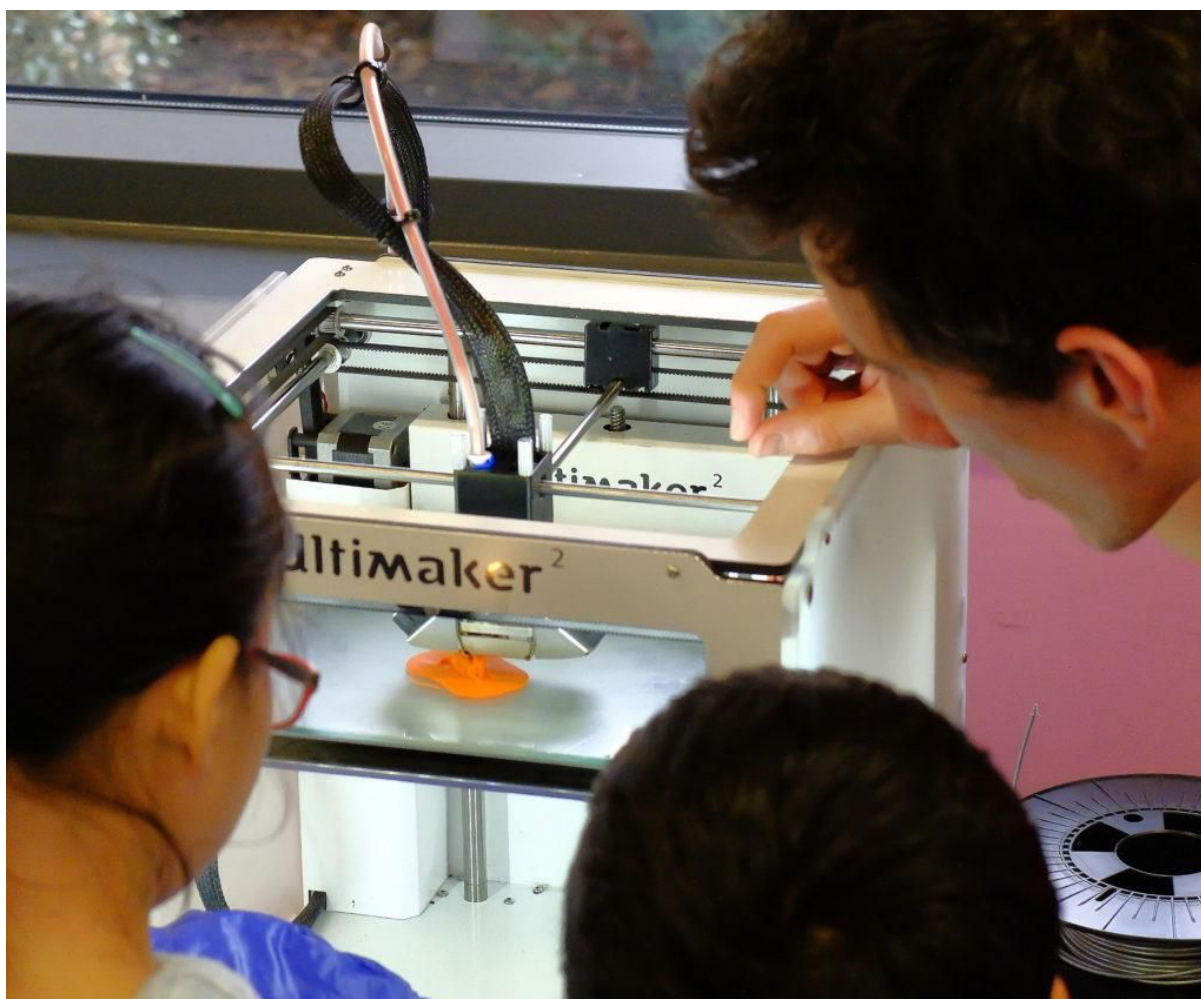
E`j` i`ndj` g`W`h`X`X`d`Y`c` \`h` `a`h`c`i`d`e`g`V`i`X`Z`i`d`X`gZ`ViZ` \`V`b` Z`h`c`H`X`g`Vi`X`]` d`c`i]` Z`
G`V`h`e`W`Z`gn`E` #

*Hj ↑WdZ [dg zVgcZgh VagZVyn Xdb [dgWdZ l ↑] WWhX XdYc\ XdcXZei h 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 ^Zb Zcih#

Hj ↑WāZ^]dgVZ^c^Zgh^V^ZY^+z^#HX^ZcXZ^~ 1h^hi^Vj^]gpb v^&^%^[dgj e^i^d^*^%eZdeaZ#

ii. 3D PRINTING DEMO

Ndj kZ] ZVgY VæVWdj i i] Zb !cdl hZZdcZc VXi dc D] g(9°egciZgl æWZg cc c\ Væ YVn! Xdb Zl 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 l æVZ \ kZc M Vn#: VX] 1Zb iV Zh(%"+%b cj iZhīd°egci#

iii. WEARABLE TECH

: meadgZi] Z] ij gZd[[Vh] dc VcYiZX] cdæ\ nVcY YZh^c ndj gdl c iZX] idiZ VW\ #c V ' "] dj ghZhhdc ndj æXdchig Xi VhZl c XgXj 1!hZl l 1] XdcYj Xi kZi] gZVY VcYb V Z ndj gA: 9h a\ i] j e l] æZ] Vkc\ idch d [j c Væc\ i] Zl Vn"

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

iv. CONDUCTIVE PAINT

< Zi XgZVi kZ VcY Vg c\ id a [Z V Xda VWdgi kZ XVckVh d [Vg fi a\] i # J h c\ b V\ c Vi dc id YgVl h b eZ b V Z d [ndj gX] d XZ! l] æZ æVg c c\] dl id c Xdgedgi 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 [K6l #

5 PATTERNCRAFT

EViiZgc8gV[i`h`Vc`VcVad\j Z`id`Y^`fVaej cX] `XVg`gZVYZgi] Vi`iZVX] Zh`i] Z
 [j cYVb ZciVh`d[`egd\g/b b `e\`VcY`ZcXdY`e\`YViV`i] g]j \] `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`W`<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
 aZVgc`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] Zdgn`#

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

: meadgZ] dl WcVgnYViV^hj hZYid^hidgZ^b V\Zh^c^i] Z[dgb d[%hVcY^&hVcY^XgZViZ
 b V\Zh^c^B cZXgV[i j h^c^e j cX] XVgYh#; daadl c^i] h^c^igdyj Xi^dc^aVgcZghl^ ai dg
 c^gdj eh^id^YZh^c^VcY^egd\g/b Vc^- m " 9 Vc^b Vi^dc^c^B cZXgV[i #6YkVcXZY
 aVgcZghl^ ai] VkZ^i] Z^deedgj c^fn^id^ZmeadgZ^i] Z^E ni] dc^XdY^c^ VZ] c^Y^i] Z^egdXZh
 VcY^b V^ Z^X] Vc^Zh^id^i] Z^gVc^b Vi^dc^Wh^ZY^c^i] Z^XdYZ#

Hj ^WZ^ [dgZkZgndcZ#B ViZgVah^Xdhi^v&\$eZghdc#

ii. ENCODING DATA

J hZ ej cX] XVgYh id ZmeadgZ] dl WcVgn^hj hZY id hidgZ YViV^c^i] Z [dgb d[%hVcY^&
 eVg^X^eVcih^l^ aVZ aVgc] dl id XdckZg YZcVgn^cj b VZgh id WcVgn VcY ZcXdYZ VcY
 YZXdYZ^cj b VZgh j h^c^ B cZXgV[i Wj^ah^#^l] Z^gdj e^l^ ai] Zc^egd\gZhh id XgZVi^c^\
 b ZhV\Zh j h^c^ i] Z VhX^Vae] VWZi VcY j hZ ej cX] XVgYh id b V^Z iZmi VeeZVgdc
 hXgZc#

Hj ^WZ^ [dgZkZgndcZ#B ViZgVah^Xdhi^v&\$eZghdc#

iii. PROGRAMMING TURTLES

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

Hj ^WZ^ [dgZkZgndcZ#B ViZgVah^Xdhi^v&\$eZghdc#

iv. INFRARED CIRCUITS

7Z^c^c^c^l^ ^] Vc^c^igdyj Xi^dc^id^EViiZgc8gV[i^eVg^X^eVcih^l^ aab V^Z^V^ej cX] XVgY
 VcY^hZZ^i] Z^gYViV^igVch^iZY^cid^V^B cZXgV[i^Wj^ah^#^l] Z^gdj e^l^ ai] Zc^ZmeadgZ] dl
 i] Z^gZVYZg^l^ dg h^Wj^ah^c^c^ [gVZ^YZiZXidgh^j h^c^h^b eZ^Xdb edcZcih^VcY
 ZaXigdc^X^egidine^c^WdVgYh^#^l] Zn^l^ aVZ^ZcXdj g^ZY^id^iZhi^i] Z^YZiZXidgj h^c^\
 Y^l^ [ZgZci^ej cX] XVgY^b ViZgVah^VcY^kVgn^c^l] daZ^h^bZh^VcY^Yg/l^ i] Z^gXgX^h^j h^c^\
 gZXd^c^hZY^hnb Wdh#

Hj ^WZ^ [dgZkZgndcZ#B ViZgVah^Xdhi^v&\$eZghdc#

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

6 ADDITIONAL INFORMATION

I] Z Yj gVi ċdc d[i] Z I dg h] de Xvc WZ iV ċdgZY id hj ↑ ndj ggZfj ċZb Zcih! i] Z b ċ ċ 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\gZgZkZci!dgVhVċeVX` V\Z`d[ċ dg h] deh#

; VXċVidgi ċ Zh ċXċj YZ igVkJā hZij e VcY XāVgċ\ Ydl c#9gde"ċ I dg h] deh g c [dgV āZc\i] d[i ċ Z d[ndj gX] ddhċ\#EāVhZ Vādċ dcZ"] dj g[dghZij e VcY (%b ċj iZh [dg XāVgċ\ Ydl c#EāVhZ Vāhd cdiZ [VXċVidgXdhih VgZ ċ VYY↑ċdc id Vcn b ViZgVaXdhih! YZeZcYVci`dc`i] Z`ċj b WZgd[`[VXċVidgh`gZfj ċZY`VcY`i] Z`āZc\i] `d[`VXi ċċn#

J caZhh di] Zg ċhZ 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 gZfj ċZ i] Z`kZcj Z`id`] VkJ`deZc`VXXZhh`id`[gZ`i ↑#

L dg h] deh dj ihYZ d[<gZViZg B VcX] ZhiZg b Vn Vāhd ċXċj YZ igVkJā VcY VXXdb b dYVi ċdc`Xdhih#6āēgXZh`VgZ`Znċj hċZ`d[`K6I #

