

Giovanni Anastasio

Final Key Finding Assignment

Mystery Melody 1:

MYSTERY1 >> 2LP PLAY 6RP PLAY LP PLAY LP PLAY S2 LP PLAY 2RP PLAY LP PLAY 2RP
PLAY X2 LP PLAY 3LP 2PLAY 2LP PLAYXRP PLAY 5RP PLAY LP PLAY LP PLAY LP PLAY
REST

A1 \ G1 \ F1 \ E1 \ D1/2 / F1/2 \ E1/2 / G1/2 \ F1 \ C1 / C1 \ Z1 \ A1 \ F1 \ E1 \ D1 \ C1 R1

Key Finding Calculation:

Clay> .TRACE.KKFA.ON

Meta> -STATS

Performing the Krumhansl Key Finding Algorithm ...

pitchclass-duration sequence ...

A1.0 G1.0 F1.0 E1.0 D0.5 F0.5 E0.5 G0.5 F1.0 C1.0 C1.0 Z1.0 A1.0 F1.0 E1.0 D1.0 C1.0

pprofile ...

C3.0 C#0.0 D1.5 Eb0.0 E2.5 F3.5 F#0.0 G1.5 Ab0.0 A2.0 Bb1.0 B0.0

computing a correlation

pitch profile ...

C3.0 C#0.0 D1.5 Eb0.0 E2.5 F3.5 F#0.0 G1.5 Ab0.0 A2.0 Bb1.0 B0.0

key profile Cmajor ...

(C,6.35)(C#,2.23)(D,3.48)(Eb,2.33)(E,4.38)(F,4.09)(F#,2.52)(G,5.19)(Ab,2.39)(A,3.66)(Bb,2.29)(B,2.88)

xbar = 1.25

ybar = 3.4825000000000004

cor(top) = 14.692499999999999

cor(bot(x)) = 18.25

cor(bot(y)) = 19.146225

cor(bot) = 18.692742074131342

cor = 0.786000253025091

computing a correlation

pitch profile ...

C3.0 C#0.0 D1.5 Eb0.0 E2.5 F3.5 F#0.0 G1.5 Ab0.0 A2.0 Bb1.0 B0.0

key profile Cminor ...

(C,6.33)(C#,2.68)(D,3.52)(Eb,5.38)(E,2.6)(F,3.53)(G#,2.54)(G,4.75)(Ab,3.98)(A,2.69)(Bb,3.34)(B,3.17)

xbar = 1.25

ybar = 3.709166666666667

cor(top) = 3.3325000000000005

cor(bot(x)) = 18.25

cor(bot(y)) = 16.007091666666668

cor(bot) = 17.09179402276621

cor = 0.19497660664299618

computing a correlation

pitch profile ...

C3.0 C#0.0 D1.5 Eb0.0 E2.5 F3.5 F#0.0 G1.5 Ab0.0 A2.0 Bb1.0 B0.0

key profile CSHARPmajor ...

(C,2.88)(C#,6.35)(D,2.23)(Eb,3.48)(E,2.33)(F,4.38)(F#,4.09)(G,2.52)(Ab,5.19)(A,2.39)(Bb,3.66)(B,2.29)

xbar = 1.25

ybar = 3.4825

cor(top) = -6.8774999999999995

cor(bot(x)) = 18.25

cor(bot(y)) = 19.146224999999998

cor(bot) = 18.69274207413134

cor = -0.3679235487616174

computing a correlation

pitch profile ...

C3.0 C#0.0 D1.5 Eb0.0 E2.5 F3.5 F#0.0 G1.5 Ab0.0 A2.0 Bb1.0 B0.0

key profile CSHARPminor ...

(C,3.17)(C#,6.33)(D,2.68)(Eb,3.52)(E,5.38)(F,2.6)(F#,3.53)(G,2.54)(Ab,4.75)(A,3.98)(Bb,2.69)(B,3.34)

xbar = 1.25

ybar = 3.7091666666666666

cor(top) = -5.0974999999999999

cor(bot(x)) = 18.25

cor(bot(y)) = 16.0070916666666668

cor(bot) = 17.09179402276621

cor = -0.29824253634288755

computing a correlation

pitch profile ...

C3.0 C#0.0 D1.5 Eb0.0 E2.5 F3.5 F#0.0 G1.5 Ab0.0 A2.0 Bb1.0 B0.0

key profile Dmajor ...

(C,2.29)(C#,2.88)(D,6.35)(Eb,2.23)(E,3.48)(F,2.33)(F#,4.38)(G,4.09)(Ab,2.52)(A,5.19)(Bb,2.39)(B,3.66)

xbar = 1.25

ybar = 3.4825000000000004

cor(top) = -0.08249999999999988

cor(bot(x)) = 18.25

cor(bot(y)) = 19.146225

cor(bot) = 18.692742074131342

cor = -0.004413477684163285

computing a correlation

pitch profile ...

C3.0 C#0.0 D1.5 Eb0.0 E2.5 F3.5 F#0.0 G1.5 Ab0.0 A2.0 Bb1.0 B0.0

key profile Dminor ...

(C,3.34)(C#,3.17)(D,6.33)(Eb,2.68)(E,3.52)(F,5.38)(F#,2.6)(G,3.53)(Ab,2.54)(A,4.75)(Bb,3.98)(B,2.69)

xbar = 1.25

ybar = 3.7091666666666665

cor(top) = 10.282499999999999

cor(bot(x)) = 18.25

cor(bot(y)) = 16.007091666666668

cor(bot) = 17.09179402276621

cor = 0.6016044884640983

computing a correlation

pitch profile ...

C3.0 C#0.0 D1.5 Eb0.0 E2.5 F3.5 F#0.0 G1.5 Ab0.0 A2.0 Bb1.0 B0.0

key profile EFLATmajor ...

(D,3.66)(C#,2.29)(D,2.88)(Eb,6.35)(E,2.23)(F,3.48)(F#,2.33)(G,4.38)(Ab,4.09)(A,2.52)(Bb,5.19)(B,2.39)

xbar = 1.25

ybar = 3.4825

cor(top) = -2.3824999999999994

cor(bot(x)) = 18.25

cor(bot(y)) = 19.146225

cor(bot) = 18.692742074131342

cor = -0.1274558858487173

computing a correlation

pitch profile ...

C3.0 C#0.0 D1.5 Eb0.0 E2.5 F3.5 F#0.0 G1.5 Ab0.0 A2.0 Bb1.0 B0.0

key profile EFLATminor ...

(C,2.69)(C#,3.34)(D,3.17)(Eb,6.33)(E,2.68)(F,3.52)(F#,5.38)(FG,2.6)(Ab,3.53)(A,2.54)(Bb,4.75)(B,3.98)

xbar = 1.25

ybar = 3.7091666666666665

cor(top) = -10.062499999999996

cor(bot(x)) = 18.25

cor(bot(y)) = 16.007091666666664

cor(bot) = 17.091794022766205

cor = -0.5887328145071714

computing a correlation

pitch profile ...

C3.0 C#0.0 D1.5 Eb0.0 E2.5 F3.5 F#0.0 G1.5 Ab0.0 A2.0 Bb1.0 B0.0

key profile E major ...

(C,2.39)(C#,3.66)(D,2.29)(Eb,2.88)(E,6.35)(F,2.23)(F#,3.48)(G,2.33)(Ab,4.38)(A,4.09)(Bb,2.52)(B,5.19)

xbar = 1.25

ybar = 3.4825

cor(top) = -3.7575000000000003

cor(bot(x)) = 18.25

cor(bot(y)) = 19.146225

cor(bot) = 18.692742074131342

cor = -0.20101384725143984

computing a correlation

pitch profile ...

C3.0 C#0.0 D1.5 Eb0.0 E2.5 F3.5 F#0.0 G1.5 Ab0.0 A2.0 Bb1.0 B0.0

key profile E minor ...

(C,3.98)(C#,2.69)(D,3.34)(Eb,3.17)(E,6.33)(F,2.68)(F#,3.52)(G,5.38)(Ab,2.6)(A,3.53)(Bb,2.54)(B,4.75)

xbar = 1.25

ybar = 3.7091666666666665

cor(top) = 4.187499999999998

cor(bot(x)) = 18.25

cor(bot(y)) = 16.007091666666668

cor(bot) = 17.09179402276621

cor = 0.2450006122483259

computing a correlation

pitch profile ...

C3.0 C#0.0 D1.5 Eb0.0 E2.5 F3.5 F#0.0 G1.5 Ab0.0 A2.0 Bb1.0 B0.0

key profile Fmajor ...

(C,5.19)(C#,2.39)(D,3.66)(Eb,2.29)(E,2.88)(F,6.35)(F#,2.23)(G,3.48)(Ab,2.33)(A,4.38)(Bb,4.09)(B,2.52)

xbar = 1.25

ybar = 3.4825

cor(top) = 16.317500000000003

cor(bot(x)) = 18.25

cor(bot(y)) = 19.146225

cor(bot) = 18.692742074131342

cor = 0.8729323892283086

computing a correlation

pitch profile ...

C3.0 C#0.0 D1.5 Eb0.0 E2.5 F3.5 F#0.0 G1.5 Ab0.0 A2.0 Bb1.0 B0.0

key profile Fminor ...

(C,4.75)(C#,3.98)(D,2.69)(Eb,3.34)(E,3.17)(F,6.33)(F#,2.68)(G,3.52)(Ab,5.38)(A,2.6)(Bb,3.53)(B,2.54)

xbar = 1.25

ybar = 3.7091666666666665

cor(top) = 6.7375

cor(bot(x)) = 18.25

cor(bot(y)) = 16.007091666666664

cor(bot) = 17.091794022766205

cor = 0.39419501493088877

computing a correlation

pitch profile ...

C3.0 C#0.0 D1.5 Eb0.0 E2.5 F3.5 F#0.0 G1.5 Ab0.0 A2.0 Bb1.0 B0.0

key profile FSHARPmajor ...

(C,2.52)(C#,5.19)(D,2.39)(Eb,3.66)(E,2.29)(F,2.88)(F#,6.35)(G,2.23)(Ab,3.48)(A,2.33)(Bb,4.38)(B,4.09)

xbar = 1.25

ybar = 3.4825000000000004
cor(top) = -12.9025
cor(bot(x)) = 18.25
cor(bot(y)) = 19.146225
cor(bot) = 18.692742074131342
cor = -0.6902411614535469

computing a correlation

pitch profile ...

C3.0 C#0.0 D1.5 Eb0.0 E2.5 F3.5 F#0.0 G1.5 Ab0.0 A2.0 Bb1.0 B0.0

key profile FSHARPminor ...

(C,2.54)(C#,4.75)(D,3.98)(Eb,2.69)(E,3.34)(F,3.17)(F#,6.33)(G,2.68)(Ab,3.52)(A,5.38)(Bb,2.6)(B,3.53)

xbar = 1.25

ybar = 3.709166666666667

cor(top) = -5.222500000000001

cor(bot(x)) = 18.25

cor(bot(y)) = 16.007091666666668

cor(bot) = 17.09179402276621

cor = -0.30555598745477797

computing a correlation

pitch profile ...

C3.0 C#0.0 D1.5 Eb0.0 E2.5 F3.5 F#0.0 G1.5 Ab0.0 A2.0 Bb1.0 B0.0

key profile Gmajor ...

(C,4.09)(C#,2.52)(D,5.19)(Eb,2.39)(E,3.66)(F,2.29)(F#,2.88)(G,6.35)(Ab,2.23)(A,3.48)(Bb,2.33)(B,4.38)

xbar = 1.25

ybar = 3.4825

cor(top) = 3.7975000000000003

cor(bot(x)) = 18.25

cor(bot(y)) = 19.146224999999998

cor(bot) = 18.69274207413134

cor = 0.20315371521951908

computing a correlation

pitch profile ...

C3.0 C#0.0 D1.5 Eb0.0 E2.5 F3.5 F#0.0 G1.5 Ab0.0 A2.0 Bb1.0 B0.0

key profile Gminor ...

(C,3.53)(C#,2.54)(D,4.75)(Eb,3.98)(E,2.69)(F,3.34)(F#,3.17)(G,6.33)(Ab,2.68)(A,3.52)(Bb,5.38)(B,2.6)

xbar = 1.25

ybar = 3.709166666666667

cor(top) = 2.4074999999999993

cor(bot(x)) = 18.25

cor(bot(y)) = 16.007091666666668

cor(bot) = 17.09179402276621

cor = 0.1408570684150077

computing a correlation

pitch profile ...

C3.0 C#0.0 D1.5 Eb0.0 E2.5 F3.5 F#0.0 G1.5 Ab0.0 A2.0 Bb1.0 B0.0

key profile AFLATmajor ...

(C,4.38)(C#,4.09)(D,2.52)(Eb,5.19)(E,2.39)(F,3.66)(F#,2.29)(G,2.88)(Ab,6.35)(A,2.23)(Bb,3.48)(B,2.33)

xbar = 1.25

ybar = 3.4824999999999995

cor(top) = -4.2725000000000001

cor(bot(x)) = 18.25

cor(bot(y)) = 19.146224999999998

cor(bot) = 18.69274207413134

cor = -0.22856464734045961

computing a correlation

pitch profile ...

C3.0 C#0.0 D1.5 Eb0.0 E2.5 F3.5 F#0.0 G1.5 Ab0.0 A2.0 Bb1.0 B0.0

key profile AFLATminor ...

(C,2.6)(C#,3.53)(D,2.54)(Eb,4.75)(E,3.98)(F,2.69)(F#,3.34)(G,3.17)(Ab,6.33)(A,2.68)(Bb,3.52)(B,5.38)

xbar = 1.25

ybar = 3.709166666666667

cor(top) = -11.0275

cor(bot(x)) = 18.25

cor(bot(y)) = 16.007091666666668

cor(bot) = 17.09179402276621

cor = -0.6451926570909647

computing a correlation

pitch profile ...

C3.0 C#0.0 D1.5 Eb0.0 E2.5 F3.5 F#0.0 G1.5 Ab0.0 A2.0 Bb1.0 B0.0

key profile Amajor ...

(C,2.33)(C#,4.38)(D,4.09)(Eb,2.52)(E,5.19)(F,2.39)(F#,3.66)(G,2.29)(Ab,2.88)(A,6.35)(Bb,2.23)(B,3.48)

xbar = 1.25

ybar = 3.4824999999999995

cor(top) = 0.5925000000000011

cor(bot(x)) = 18.25

cor(bot(y)) = 19.146224999999998

cor(bot) = 18.69274207413134

cor = 0.031696794277173215

computing a correlation

pitch profile ...

C3.0 C#0.0 D1.5 Eb0.0 E2.5 F3.5 F#0.0 G1.5 Ab0.0 A2.0 Bb1.0 B0.0

key profile Aminor ...

(C,5.38)(C#,2.6)(D,3.53)(Eb,2.54)(E,4.75)(F,3.98)(F#,2.69)(G,3.34)(Ab,3.17)(A,6.33)(Bb,2.68)(B,3.52)

xbar = 1.25
ybar = 3.709166666666667
cor(top) = 11.952499999999999
cor(bot(x)) = 18.25
cor(bot(y)) = 16.007091666666664
cor(bot) = 17.091794022766205
cor = 0.6993121953189533

computing a correlation

pitch profile ...

C3.0 C#0.0 D1.5 Eb0.0 E2.5 F3.5 F#0.0 G1.5 Ab0.0 A2.0 Bb1.0 B0.0

key profile BFLATmajor ...

(C,3.48)(C#,2.33)(D,4.38)(Eb,4.09)(E,2.52)(F,5.19)(F#,2.39)(G,3.66)(Ab,2.29)(A,2.88)(Bb,6.35)(B,2.23)

xbar = 1.25

ybar = 3.4825

cor(top) = 6.8375

cor(bot(x)) = 18.25

cor(bot(y)) = 19.146224999999998

cor(bot) = 18.69274207413134

cor = 0.3657836807935383

computing a correlation

pitch profile ...

C3.0 C#0.0 D1.5 Eb0.0 E2.5 F3.5 F#0.0 G1.5 Ab0.0 A2.0 Bb1.0 B0.0

key profile BFLATminor ...

(C,3.52)(C#,5.38)(D,2.6)(Eb,3.53)(E,2.54)(F,4.75)(F#,3.98)(G,2.69)(Ab,3.34)(A,3.17)(Bb,6.33)(B,2.68)

xbar = 1.25

ybar = 3.7091666666666665

cor(top) = -1.4974999999999996

cor(bot(x)) = 18.25

cor(bot(y)) = 16.007091666666668

cor(bot) = 17.09179402276621

cor = -0.08761514432044612

computing a correlation

pitch profile ...

C3.0 C#0.0 D1.5 Eb0.0 E2.5 F3.5 F#0.0 G1.5 Ab0.0 A2.0 Bb1.0 B0.0

key profile Bmajor ...

(C,2.23)(C#,3.48)(D,2.33)(Eb,4.38)(E,4.09)(F,2.52)(F#,5.19)(G,2.39)(Ab,3.66)(A,2.29)(Bb,2.88)(B,6.35)

xbar = 1.25

ybar = 3.4825000000000004

cor(top) = -11.962500000000002

cor(bot(x)) = 18.25

cor(bot(y)) = 19.146224999999998

cor(bot) = 18.69274207413134

cor = -0.639954264203686

computing a correlation

pitch profile ...

C3.0 C#0.0 D1.5 Eb0.0 E2.5 F3.5 F#0.0 G1.5 Ab0.0 A2.0 Bb1.0 B0.0

key profile Bminor ...

(C,2.68)(C#,3.52)(D,5.38)(Eb,2.6)(E,3.53)(F,2.54)(F#,4.75)(G,3.98)(Ab,2.69)(A,3.34)(Bb,3.17)(B,6.33)

xbar = 1.25

ybar = 3.709166666666667

cor(top) = -5.9925000000000015

cor(bot(x)) = 18.25

cor(bot(y)) = 16.007091666666668

cor(bot) = 17.09179402276621

cor = -0.35060684630402245

Key/Corrolation Table ...

C major	0.786(2)	C minor	0.194977(9)
C# major	-0.367924(20)	C# minor	-0.298243(17)
D major	-0.004413(12)	D minor	0.601604(4)
Eb major	-0.127456(14)	Eb minor	-0.588733(21)
E major	-0.201014(15)	E minor	0.245001(7)
F major	0.872932(1)***	F minor	0.394195(5)
F# major	-0.690241(24)	F# minor	-0.305556(18)
G major	0.203154(8)	G minor	0.140857(10)
Ab major	-0.228565(16)	Ab minor	-0.645193(23)
A major	0.031697(11)	A minor	0.699312(3)
Bb major	0.365784(6)	Bb minor	-0.087615(13)
B major	-0.639954(22)	B minor	-0.350607(19)

F major - is the best fit key for this melody

1. F Major
2. C Major
3. A Minor
4. D Minor
5. F Minor

Mystery Melody 1 in Proper Key:

Clay> PROPERKEY1 >> F-MAJOR\$ MYSTERY1

Clay> PROPERKEY1

/ D1 / C1 \ Z1 \ A1 \ G1/2 / Z1/2 \ A1/2 / C1/2 \ Z1 \ F1 F1 \ W1 \ D1 / Z1 \ A1 \ G1 \ F1 R1

Notes:

After determining the key of this melody, I was surprised to see a mix of both major and minor keys. I also would have never guessed that the best fit key was F Major with all of us having to do the initial encoding in C Major. This type of analysis would be very useful for determining the key of large pieces because of the extensive calculation list for all the well-known scales. This key finding method is also less demanding than the RS key finding method and it returns more in-depth results.

Mystery Melody 2:

MYSTERY2 >> RP PLAY S2 PLAYXLP 2LP PLAY X2 LP PLAY PLAY 3RP PLAYXLP 2LP PLAY
LP X2 PLAY S2 5LP 2RP PLAY RP S2 PLAYXRP RP PLAY X2 2RP PLAY LP PLAY X2 PLAY 2LP
PLAYXRP S2 3LP 8RP PLAY S2 PLAYXLP 2LP PLAY X2 LP PLAY PLAY 3RP PLAYXLP 2LP
PLAY LP X2 PLAY S2 5LP 2RP PLAY RP S2 PLAYXRP RP PLAY X2 2RP PLAY LP PLAY 4LP
PLAY 2RP PLAYXRP 2LP X2 PLAY S2 LP 2RP PLAY S2 PLAY RP PLAYXRP X2 RP PLAY PLAY
PLAYXLP 2RP PLAY LP X2 PLAY S2 5LP 2RP PLAY S2 PLAY RP PLAYXRP X2 RP PLAY PLAY
PLAYXLP 2RP PLAY LP X2 PLAY S2 5LP 8RP PLAY S2 PLAYXLP 2LP PLAY X2 LP PLAY
PLAY 3RP PLAYXLP 2LP PLAY LP X2 PLAY S2 5LP 2RP PLAY RP S2 PLAYXRP RP PLAY X2
2RP PLAY LP PLAY 4LP PLAY 2RP PLAYXRP 2LP X2 PLAY S2 LP

D1 \ V1/2 \ B1/2 \ A1 A1 / V1 \ B1 \ A2 \ E1 / X1/2 / G1/2 / B1 \ A1 A2 \ X2 / D1 \ V1/2 \ B1/2 \ A1 A1 /
V1 \ B1 \ A2 \ E1 / X1/2 / G1/2 / B1 \ A1 \ D1 / X1 \ D2 / E1 E1/2 / X1/2 / G1 G1 \ X1 / B1 \ A2 \ E1
E1/2 / X1/2 / G1 G1 \ X1 / B1 \ A2 / D1 \ V1/2 \ B1/2 \ A1 A1 / V1 \ B1 \ A2 \ E1 / X1/2 / G1/2 / B1 \ A1
\ D1 / X1 \ D2

Clay> .TRACE.KKFA.ON

Meta> -STATS

Performing the Krumhansl Key Finding Algorithm ...

pitchclass-duration sequence ...

D1.0 V0.5 B0.5 A1.0 A1.0 V1.0 B1.0 A2.0 E1.0 X0.5 G0.5 B1.0 A1.0 A2.0 X2.0 D1.0 V0.5 B0.5 A1.0
A1.0 V1.0 B1.0 A2.0 E1.0 X0.5 G0.5 B1.0 A1.0 D1.0 X1.0 D2.0 E1.0 E0.5 X0.5 G1.0 G1.0 X1.0 B1.0
A2.0 E1.0 E0.5 X0.5 G1.0 G1.0 X1.0 B1.0 A2.0 D1.0 V0.5 B0.5 A1.0 A1.0 V1.0 B1.0 A2.0 E1.0 X0.5
G0.5 B1.0 A1.0 D1.0 X1.0 D2.0

pprofile ...

C0.0 C#4.5 D9.0 Eb0.0 E6.0 F0.0 F#8.5 G5.5 Ab0.0 A21.0 Bb0.0 B9.5

computing a correlation

pitch profile ...

C0.0 C#4.5 D9.0 Eb0.0 E6.0 F0.0 F#8.5 G5.5 Ab0.0 A21.0 Bb0.0 B9.5

key profile Cmajor ...

(C,6.35)(C#,2.23)(D,3.48)(Eb,2.33)(E,4.38)(F,4.09)(F#,2.52)(G,5.19)(Ab,2.39)(A,3.66)(Bb,2.29)(B,2.88)

xbar = 5.333333333333333

ybar = 3.4825000000000004

```
cor(top) = -1.059999999999978
cor(bot(x)) = 429.66666666666674
cor(bot(y)) = 19.146225
cor(bot) = 90.70002577177144
cor = -0.01168687650284992
```

computing a correlation

pitch profile ...

C0.0 C#4.5 D9.0 Eb0.0 E6.0 F0.0 F#8.5 G5.5 Ab0.0 A21.0 Bb0.0 B9.5

key profile Cminor ...

(C,6.33)(C#,2.68)(D,3.52)(Eb,5.38)(E,2.6)(F,3.53)(G#,2.54)(G,4.75)(Ab,3.98)(A,2.69)(Bb,3.34)(B,3.17)

xbar = 5.333333333333333

ybar = 3.709166666666667

cor(top) = -43.72666666666666

cor(bot(x)) = 429.66666666666674

cor(bot(y)) = 16.007091666666668

cor(bot) = 82.93198248832863

cor = -0.5272593920303364

computing a correlation

pitch profile ...

C0.0 C#4.5 D9.0 Eb0.0 E6.0 F0.0 F#8.5 G5.5 Ab0.0 A21.0 Bb0.0 B9.5

key profile CSHARPmajor ...

(C,2.88)(C#,6.35)(D,2.23)(Eb,3.48)(E,2.33)(F,4.38)(F#,4.09)(G,2.52)(Ab,5.19)(A,2.39)(Bb,3.66)(B,2.29)

xbar = 5.333333333333333

ybar = 3.4825

cor(top) = -39.68499999999995

cor(bot(x)) = 429.66666666666674

cor(bot(y)) = 19.146224999999998

cor(bot) = 90.70002577177142

cor = -0.437541220769434

computing a correlation

pitch profile ...

C0.0 C#4.5 D9.0 Eb0.0 E6.0 F0.0 F#8.5 G5.5 Ab0.0 A21.0 Bb0.0 B9.5

key profile CSHARPminor ...

(C,3.17)(C#,6.33)(D,2.68)(Eb,3.52)(E,5.38)(F,2.6)(F#,3.53)(G,2.54)(Ab,4.75)(A,3.98)(Bb,2.69)(B,3.34)

xbar = 5.333333333333333

ybar = 3.709166666666666

cor(top) = 6.783333333333333

cor(bot(x)) = 429.66666666666674

cor(bot(y)) = 16.007091666666668

cor(bot) = 82.93198248832863

cor = 0.0817939367877523

computing a correlation

pitch profile ...

C0.0 C#4.5 D9.0 Eb0.0 E6.0 F0.0 F#8.5 G5.5 Ab0.0 A21.0 Bb0.0 B9.5

key profile Dmajor ...

(C,2.29)(C#,2.88)(D,6.35)(Eb,2.23)(E,3.48)(F,2.33)(F#,4.38)(G,4.09)(Ab,2.52)(A,5.19)(Bb,2.39)(B,3.66)

xbar = 5.333333333333333

ybar = 3.4825000000000004

cor(top) = 71.595

cor(bot(x)) = 429.66666666666674

cor(bot(y)) = 19.146225

cor(bot) = 90.70002577177144

cor = 0.7893603049259827

computing a correlation

pitch profile ...

C0.0 C#4.5 D9.0 Eb0.0 E6.0 F0.0 F#8.5 G5.5 Ab0.0 A21.0 Bb0.0 B9.5

key profile Dminor ...

(C,3.34)(C#,3.17)(D,6.33)(Eb,2.68)(E,3.52)(F,5.38)(F#,2.6)(G,3.53)(Ab,2.54)(A,4.75)(Bb,3.98)(B,2.69)

xbar = 5.333333333333333

ybar = 3.7091666666666665

cor(top) = 21.788333333333334

cor(bot(x)) = 429.66666666666674

cor(bot(y)) = 16.007091666666668

cor(bot) = 82.93198248832863

cor = 0.2627253404487189

computing a correlation

pitch profile ...

C0.0 C#4.5 D9.0 Eb0.0 E6.0 F0.0 F#8.5 G5.5 Ab0.0 A21.0 Bb0.0 B9.5

key profile EFLATmajor ...

(D,3.66)(C#,2.29)(D,2.88)(Eb,6.35)(E,2.23)(F,3.48)(F#,2.33)(G,4.38)(Ab,4.09)(A,2.52)(Bb,5.19)(B,2.39)

xbar = 5.333333333333333

ybar = 3.4825

cor(top) = -53.755

cor(bot(x)) = 429.66666666666674

cor(bot(y)) = 19.146225

cor(bot) = 90.70002577177144

cor = -0.59266796831198

computing a correlation

pitch profile ...

C0.0 C#4.5 D9.0 Eb0.0 E6.0 F0.0 F#8.5 G5.5 Ab0.0 A21.0 Bb0.0 B9.5

key profile EFLATminor ...

(C,2.69)(C#,3.34)(D,3.17)(Eb,6.33)(E,2.68)(F,3.52)(F#,5.38)(FG,2.6)(Ab,3.53)(A,2.54)(Bb,4.75)(B,3.98)

xbar = 5.333333333333333

ybar = 3.709166666666665
cor(top) = -26.566666666666666
cor(bot(x)) = 429.66666666666674
cor(bot(y)) = 16.007091666666664
cor(bot) = 82.93198248832861
cor = -0.32034283842672534

computing a correlation

pitch profile ...

C0.0 C#4.5 D9.0 Eb0.0 E6.0 F0.0 F#8.5 G5.5 Ab0.0 A21.0 Bb0.0 B9.5

key profile E major ...

(C,2.39)(C#,3.66)(D,2.29)(Eb,2.88)(E,6.35)(F,2.23)(F#,3.48)(G,2.33)(Ab,4.38)(A,4.09)(Bb,2.52)(B,5.19)

xbar = 5.333333333333333

ybar = 3.4825

cor(top) = 29.89

cor(bot(x)) = 429.66666666666674

cor(bot(y)) = 19.146225

cor(bot) = 90.70002577177144

cor = 0.3295478666699857

computing a correlation

pitch profile ...

C0.0 C#4.5 D9.0 Eb0.0 E6.0 F0.0 F#8.5 G5.5 Ab0.0 A21.0 Bb0.0 B9.5

key profile E minor ...

(C,3.98)(C#,2.69)(D,3.34)(Eb,3.17)(E,6.33)(F,2.68)(F#,3.52)(G,5.38)(Ab,2.6)(A,3.53)(Bb,2.54)(B,4.75)

xbar = 5.333333333333333

ybar = 3.709166666666665

cor(top) = 21.523333333333333

cor(bot(x)) = 429.66666666666674

cor(bot(y)) = 16.007091666666668

cor(bot) = 82.93198248832863

cor = 0.2595299507805978

computing a correlation

pitch profile ...

C0.0 C#4.5 D9.0 Eb0.0 E6.0 F0.0 F#8.5 G5.5 Ab0.0 A21.0 Bb0.0 B9.5

key profile Fmajor ...

(C,5.19)(C#,2.39)(D,3.66)(Eb,2.29)(E,2.88)(F,6.35)(F#,2.23)(G,3.48)(Ab,2.33)(A,4.38)(Bb,4.09)(B,2.52)

xbar = 5.333333333333333

ybar = 3.4825

cor(top) = -7.890000000000002

cor(bot(x)) = 429.66666666666674

cor(bot(y)) = 19.146225

cor(bot) = 90.70002577177144

cor = -0.08699005245989254

computing a correlation

pitch profile ...

C0.0 C#4.5 D9.0 Eb0.0 E6.0 F0.0 F#8.5 G5.5 Ab0.0 A21.0 Bb0.0 B9.5

key profile Fminor ...

(C,4.75)(C#,3.98)(D,2.69)(Eb,3.34)(E,3.17)(F,6.33)(F#,2.68)(G,3.52)(Ab,5.38)(A,2.6)(Bb,3.53)(B,2.54)

xbar = 5.333333333333333

ybar = 3.7091666666666665

cor(top) = -55.376666666666665

cor(bot(x)) = 429.66666666666674

cor(bot(y)) = 16.007091666666664

cor(bot) = 82.93198248832861

cor = -0.6677359566854689

computing a correlation

pitch profile ...

C0.0 C#4.5 D9.0 Eb0.0 E6.0 F0.0 F#8.5 G5.5 Ab0.0 A21.0 Bb0.0 B9.5

key profile FSHARPmajor ...

(C,2.52)(C#,5.19)(D,2.39)(Eb,3.66)(E,2.29)(F,2.88)(F#,6.35)(G,2.23)(Ab,3.48)(A,2.33)(Bb,4.38)(B,4.09)

xbar = 5.333333333333333

ybar = 3.4825000000000004

cor(top) = -10.250000000000002

cor(bot(x)) = 429.66666666666674

cor(bot(y)) = 19.146225

cor(bot) = 90.70002577177144

cor = -0.1130098907115207

computing a correlation

pitch profile ...

C0.0 C#4.5 D9.0 Eb0.0 E6.0 F0.0 F#8.5 G5.5 Ab0.0 A21.0 Bb0.0 B9.5

key profile FSHARPminor ...

(C,2.54)(C#,4.75)(D,3.98)(Eb,2.69)(E,3.34)(F,3.17)(F#,6.33)(G,2.68)(Ab,3.52)(A,5.38)(Bb,2.6)(B,3.53)

xbar = 5.333333333333333

ybar = 3.709166666666667

cor(top) = 54.90833333333333

cor(bot(x)) = 429.66666666666674

cor(bot(y)) = 16.007091666666668

cor(bot) = 82.93198248832863

cor = 0.6620887585927517

computing a correlation

pitch profile ...

C0.0 C#4.5 D9.0 Eb0.0 E6.0 F0.0 F#8.5 G5.5 Ab0.0 A21.0 Bb0.0 B9.5

key profile Gmajor ...

(C,4.09)(C#,2.52)(D,5.19)(Eb,2.39)(E,3.66)(F,2.29)(F#,2.88)(G,6.35)(Ab,2.23)(A,3.48)(Bb,2.33)(B,4.38)

xbar = 5.333333333333333

ybar = 3.4825

cor(top) = 31.225

cor(bot(x)) = 429.66666666666674

cor(bot(y)) = 19.146224999999998

cor(bot) = 90.70002577177142

cor = 0.34426671585046187

computing a correlation

pitch profile ...

C0.0 C#4.5 D9.0 Eb0.0 E6.0 F0.0 F#8.5 G5.5 Ab0.0 A21.0 Bb0.0 B9.5

key profile Gminor ...

(C,3.53)(C#,2.54)(D,4.75)(Eb,3.98)(E,2.69)(F,3.34)(F#,3.17)(G,6.33)(Ab,2.68)(A,3.52)(Bb,5.38)(B,2.6)

xbar = 5.333333333333333

ybar = 3.709166666666667

cor(top) = -6.686666666666664

cor(bot(x)) = 429.66666666666674

cor(bot(y)) = 16.007091666666668

cor(bot) = 82.93198248832863

cor = -0.0806283229465509

computing a correlation

pitch profile ...

C0.0 C#4.5 D9.0 Eb0.0 E6.0 F0.0 F#8.5 G5.5 Ab0.0 A21.0 Bb0.0 B9.5

key profile AFLATmajor ...

(C,4.38)(C#,4.09)(D,2.52)(Eb,5.19)(E,2.39)(F,3.66)(F#,2.29)(G,2.88)(Ab,6.35)(A,2.23)(Bb,3.48)(B,2.33)

xbar = 5.333333333333333

ybar = 3.4824999999999995

cor(top) = -63.185

cor(bot(x)) = 429.66666666666674

cor(bot(y)) = 19.146224999999998

cor(bot) = 90.70002577177142

cor = -0.6966370677665792

computing a correlation

pitch profile ...

C0.0 C#4.5 D9.0 Eb0.0 E6.0 F0.0 F#8.5 G5.5 Ab0.0 A21.0 Bb0.0 B9.5

key profile AFLATminor ...

(C,2.6)(C#,3.53)(D,2.54)(Eb,4.75)(E,3.98)(F,2.69)(F#,3.34)(G,3.17)(Ab,6.33)(A,2.68)(Bb,3.52)(B,5.38)

xbar = 5.333333333333333

ybar = 3.709166666666667

cor(top) = -21.546666666666667

cor(bot(x)) = 429.66666666666674

cor(bot(y)) = 16.007091666666668

cor(bot) = 82.93198248832863

cor = -0.25981130584571543

computing a correlation

pitch profile ...

C0.0 C#4.5 D9.0 Eb0.0 E6.0 F0.0 F#8.5 G5.5 Ab0.0 A21.0 Bb0.0 B9.5

key profile Amajor ...

(C,2.33)(C#,4.38)(D,4.09)(Eb,2.52)(E,5.19)(F,2.39)(F#,3.66)(G,2.29)(Ab,2.88)(A,6.35)(Bb,2.23)(B,3.48)

xbar = 5.333333333333333

ybar = 3.4824999999999995

cor(top) = 74.89499999999998

cor(bot(x)) = 429.66666666666674

cor(bot(y)) = 19.146224999999998

cor(bot) = 90.70002577177142

cor = 0.8257439770574967

computing a correlation

pitch profile ...

C0.0 C#4.5 D9.0 Eb0.0 E6.0 F0.0 F#8.5 G5.5 Ab0.0 A21.0 Bb0.0 B9.5

key profile Aminor ...

(C,5.38)(C#,2.6)(D,3.53)(Eb,2.54)(E,4.75)(F,3.98)(F#,2.69)(G,3.34)(Ab,3.17)(A,6.33)(Bb,2.68)(B,3.52)

xbar = 5.333333333333333

ybar = 3.709166666666667

cor(top) = 42.18833333333333

cor(bot(x)) = 429.66666666666674

cor(bot(y)) = 16.007091666666664

cor(bot) = 82.93198248832861

cor = 0.5087100545229422

computing a correlation

pitch profile ...

C0.0 C#4.5 D9.0 Eb0.0 E6.0 F0.0 F#8.5 G5.5 Ab0.0 A21.0 Bb0.0 B9.5

key profile BFLATmajor ...

(C,3.48)(C#,2.33)(D,4.38)(Eb,4.09)(E,2.52)(F,5.19)(F#,2.39)(G,3.66)(Ab,2.29)(A,2.88)(Bb,6.35)(B,2.23)

xbar = 5.333333333333333

ybar = 3.4825

cor(top) = -35.745000000000005

cor(bot(x)) = 429.66666666666674

cor(bot(y)) = 19.146224999999998

cor(bot) = 90.70002577177142

cor = -0.3941013213154447

computing a correlation

pitch profile ...

C0.0 C#4.5 D9.0 Eb0.0 E6.0 F0.0 F#8.5 G5.5 Ab0.0 A21.0 Bb0.0 B9.5

key profile BFLATminor ...

(C,3.52)(C#,5.38)(D,2.6)(Eb,3.53)(E,2.54)(F,4.75)(F#,3.98)(G,2.69)(Ab,3.34)(A,3.17)(Bb,6.33)(B,2.68)

xbar = 5.333333333333333

ybar = 3.7091666666666665

cor(top) = -33.88166666666667

cor(bot(x)) = 429.66666666666674

cor(bot(y)) = 16.007091666666668

cor(bot) = 82.93198248832863

cor = -0.40854765134108517

computing a correlation

pitch profile ...

C0.0 C#4.5 D9.0 Eb0.0 E6.0 F0.0 F#8.5 G5.5 Ab0.0 A21.0 Bb0.0 B9.5

key profile Bmajor ...

(C,2.23)(C#,3.48)(D,2.33)(Eb,4.38)(E,4.09)(F,2.52)(F#,5.19)(G,2.39)(Ab,3.66)(A,2.29)(Bb,2.88)(B,6.35)

xbar = 5.333333333333333

ybar = 3.4825000000000004

cor(top) = 3.964999999999997

cor(bot(x)) = 429.66666666666674

cor(bot(y)) = 19.146224999999998

cor(bot) = 90.70002577177142

cor = 0.043715533333773586

computing a correlation

pitch profile ...

C0.0 C#4.5 D9.0 Eb0.0 E6.0 F0.0 F#8.5 G5.5 Ab0.0 A21.0 Bb0.0 B9.5

key profile Bminor ...

(C,2.68)(C#,3.52)(D,5.38)(Eb,2.6)(E,3.53)(F,2.54)(F#,4.75)(G,3.98)(Ab,2.69)(A,3.34)(Bb,3.17)(B,6.33)

xbar = 5.333333333333333

ybar = 3.709166666666667

cor(top) = 40.593333333333334

cor(bot(x)) = 429.66666666666674

cor(bot(y)) = 16.007091666666668

cor(bot) = 82.93198248832863

cor = 0.48947742614311923

Key/Corrolation Table ...

C major	-0.011687(12)	C minor	-0.527259(21)
C# major	-0.437541(20)	C# minor	0.081794(10)
D major	0.78936(2)	D minor	0.262725(8)
Eb major	-0.592668(22)	Eb minor	-0.320343(17)
E major	0.329548(7)	E minor	0.25953(9)
F major	-0.08699(14)	F minor	-0.667736(23)
F# major	-0.11301(15)	F# minor	0.662089(3)
G major	0.344267(6)	G minor	-0.080628(13)
Ab major	-0.696637(24)	Ab minor	-0.259811(16)
A major	0.825744(1)***	A minor	0.50871(4)
Bb major	-0.394101(18)	Bb minor	-0.408548(19)
B major	0.043716(11)	B minor	0.489477(5)

A major - is the best fit key for this melody

1. A Major
2. D Major
3. F# Minor
4. A Minor
5. B Minor

Mystery Melody 2 in Proper Key:

PROPERKEY2 >> A-MAJOR\$ MYSTERY2

Clay> PROPERKEY2

/ B1 \ Z1/2 \ Y1/2 \ X1 X1 / Z1 \ Y1 \ X2 \ V1 / W1/2 / E1/2 / Y1 \ X1 X2 \ W2 / B1 \ Z1/2 \ Y1/2 \ X1
X1 / Z1 \ Y1 \ X2 \ V1 / W1/2 / E1/2 / Y1 \ X1 \ B1 / W1 \ B2 / V1 V1/2 / W1/2 / E1 E1 \ W1 / Y1 \ X2 \

V1 V1/2 / W1/2 / E1 E1 \ W1 / Y1 \ X2 / B1 \ Z1/2 \ Y1/2 \ X1 X1 / Z1 \ Y1 \ X2 \ V1 / W1/2 / E1/2 / Y1
\ X1 \ B1 / W1 \ B2

Notes:

After finding the best key for this melody, I was again surprised by the results I received. Even thought the original encoding was done in C Major, C Major was shown to not even make the top five best candidates. I found this encoding to be slightly harder due to the abundant use of “playxrp” and “playxlp” and in the first melody it was only required once. Overall, I enjoyed using MxM to do the key finding calculations and wished we had more time to do more with this technique.