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CM - Algorithm RS Key Finding Assignment

German Folk Song:

1. German Folk Song

2. This melody was first introduced to me in class, and I have since done multiple other assignments and work with this melody.

```
3.
MxM (Alpha) Tonal World Text Output Area
                                                                             \times
Meta> -S?
Macros... G1 G2 G3 G4 G5 G6 GFS P1 P2 P3
Meta> -S??
G1 >> PLAY 2RP PLAY 2RP X2 PLAY S2 4LP
G2 >> S2 4RP PLAY LP PLAY LP PLAY LP PLAY LP X2 X2 PLAY S2
G3 >> S2 RP 2PLAY 2LP PLAY 2LP PLAY 7RP 2PLAY 2LP PLAY 2LP PLAY X2
G4 >> S2 RP 2PLAY 2LP PLAY 2LP PLAY 7RP 2PLAY 2LP PLAY 2LP PLAY X2
G5 >> S2 PLAY RP PLAY RP PLAY RP PLAY RP X2 X2 PLAY S2 4LP
G6 >> S2 4RP PLAY LP PLAY LP PLAY LP PLAY LP X2 X2 PLAY S2
GFS >> P1 P2 P3
P1 >> G1 G2
P2 >> G3 G4
P3 >> G5 G6
Clay> GFS
C1 / E1 / G2 G1/2 \ F1/2 \ E1/2 \ D1/2 \ C2 / D1/2 D1/2 \ B1/2 \ G1/2 / G1/2
G1/2 \ E1/2 \ C1/2 / D1/2 D1/2 \ B1/2 \ G1/2 / G1/2 G1/2 \ E1/2 \ C1/2 C1/2
D1/2 / E1/2 / F1/2 / G2 G1/2 \ F1/2 \ E1/2 \ D1/2 \ C2
```

4. Candidate key set: {C-Major, G-Major}

Fit(C-Major)

= (W1*bc(first(C-Major)) + W3*bc(third(C-Major)) + W1*bc(fifth(C-Major))) / tbc

```
= ( W1*bc(C) + W3*bc(E) + W1*bc(G) ) / 24
```

= (5*bc(C) + 1*bc(E) + 3*bc(G)) / 24

= (5*6.5 + 1*3.5 + 3*8) / 24

=2.5

Fit(G-Major)

= (W1*bc(first(G-Major)) + W3*bc(third(G-Major)) + W1*bc(fifth(G-Major))) / tbc

= (W1*bc(G) + W3*bc(B) + W1*bc(D)) / 24

= (5*bc(G) + 1*bc(B) + 3*bc(D)) / 24

- = (5*8+1*1+3*3.5)/24
- =2.145833333

5. Results: Given the limited candidate key set, the best fit key for the melody, German Folk Song, is C-Major and G-Major is the second-best candidate.

C-Major Composition:

1. Major Russo

2. I created this melody myself in one of the first clay composition assignments and by using the constraints shown below.

- 6 10 Measures
- Scale: C Major
- Tones used: First and last tones must be C
- Rhythms: 1 1/2 1/2 2
- Occasionally repeat a measure

3.

```
🛃 MxM (Alpha) Tonal World Text Output Area
                                                                                  \times
Meta> -S?
Macros... B1 B2 B3 B4 B5 B6 CMAJ P1 P2 P3
Meta> -S??
B1 >> PLAY S2 2LP PLAY RP PLAY 2X2 RP PLAY S2
B2 >> PLAY LP PLAY PLAY RP X2 PLAY S2
B3 >> PLAY RP S2 PLAY RP PLAY 2X2 2LP PLAY S2
B4 >> PLAY RP S2 PLAY RP PLAY 2X2 2LP PLAY S2
B5 >> B1
B6 >> B2
CMAJ >> P1 P2 P3
P1 >> B1 B2
P2 >> B3 B4
P3 >> B5 B6
Clay> CMAJ
c1 \ A1/2 / B1/2 / c2 c1 \ B1 B1 / c2 c1 / D1/2 / E1/2 \ c2 c1 / D1/2 / E1/2 \ c2
C1 \ A1/2 / B1/2 / C2 C1 \ B1 B1 / C2
```

4. Candidate key set: {C-Major, G-Major, A-Minor}

Fit(C-Major)

```
= ( W1*bc(first(C-Major)) + W3*bc(third(C-Major)) + W1*bc(fifth(C-Major)) ) / tbc
```

= (W1*bc(C) + W3*bc(E) + W1*bc(G)) / 26

= (5*bc(C) + 1*bc(E) + 3*bc(G)) / 26

= (5*18 + 1*1 + 3*0)/26

=3.5

Fit(G-Major)

```
= ( W1*bc(first(G-Major)) + W3*bc(third(G-Major)) + W1*bc(fifth(G-Major)) ) / tbc
```

= (W1*bc(G) + W3*bc(B) + W1*bc(D)) / 26

= (5*bc(G) + 1*bc(B) + 3*bc(D)) / 26

= (5*0 + 1*5 + 3*1) / 26

=.30769231

Fit(A-Minor)

= (W1*bc(first(A-Minor)) + W3*bc(third(A-Minor)) + W1*bc(fifth(A-Minor))) / tbc

= (W1*bc(A) + W3*bc(C) + W1*bc(E)) / 26

= (5*bc(A) + 1*bc(C) + 3*bc(E)) / 26

= (5*1+1*18+3*1)/26

=1

5. Results: Given the limited candidate key set, the best fit key for the melody, Major Russo, is C-Major. A-Minor is the second best fit and G-Major is the third best candidate.

E-Minor Composition:

1. The Restricted E

2. I created this melody myself in one of the first clay composition assignments and by using the constraints shown below. Unfortunately, after reviewing the work I did creating this melody I did not follow the constraints. The note A does not have the second most presence in the melody I created, affecting the calculations I have done.

- No more than 32 bars
- Scale: E Minor

- Tones used: E G A B D
- E has more presence than any other note and A has more presence than any note but E

3.

```
🛃 MxM (Alpha) Tonal World Text Output Area
                                                                                  \times
Meta> -S?
Macros... M1 M2 M3 M4 M5 M6 M7 M8 P1 P2 P3 RESE
Meta> -S??
M1 >> X2 PLAY S2 PLAY LP PLAY RP
M2 >> S2 3PLAY X2 LP PLAY RP S2 3PLAY X2
M3 >> X2 2LP PLAY S2 LP PLAY LP PLAY 4RP
M4 >> 4LP S2 3PLAY RP X2 PLAY LP S2 3PLAY X2 4RP
M5 >> S2 2PLAY X2 LP PLAY X2 LP PLAY 2RP S2
M6 >> X2 3LP PLAY S2 PLAY RP PLAY 2RP
M7 >> M2
M8 >> M6
P1 >> M1 M2 M3
P2 >> M4 M5 M6
P3 >> M7 M8
RESE >> P1 P2 P3
Clay> RESE
/ E2 E1 \ D1 / E1/2 E1/2 E1/2 \ D1 / E1/2 E1/2 E1/2 \ C2 \ B1 \ A1 A1/2 A1/2 A1/2
/ B1 \ A1/2 A1/2 A1/2 / E1/2 E1/2 \ D1 \ C2 \ B2 B1 / C1 / E1/2 E1/2 E1/2 \ D1 /
E1/2 E1/2 E1/2 \ B2 B1 / C1
```

4. Candidate key set: {E-Minor, A-Minor, G-Major, C-Major}

Fit(E-Minor)

= (W1*bc(first(E-Minor)) + W3*bc(third(E-Minor)) + W1*bc(fifth(E-Minor))) / tbc

```
= ( W1*bc(E) + W3*bc(G) + W1*bc(B) ) / 32
```

= (5*bc(E) + 1*bc(G) + 3*bc(B)) / 32

= (5*10 + 1*0 + 3*8)/32

=2.3125

Fit(A-Minor)

= (W1*bc(first(A-Minor)) + W3*bc(third(A-Minor)) + W1*bc(fifth(A-Minor))) / tbc

= (5*bc(A) + 1*bc(C) + 3*bc(E)) / 32

= (5*4 + 1*6 + 3*10) / 32

=1.75

Fit(G-Major)

```
= (W1*bc(first(G-Major)) + W3*bc(third(G-Major)) + W1*bc(fifth(G-Major))) / tbc
```

```
= ( W1*bc(G) + W3*bc(B) + W1*bc(D) ) / 32
```

= (5*bc(G) + 1*bc(B) + 3*bc(D)) / 32

```
= (5*0 + 1*8 + 3*4) / 32
```

=.625

Fit(C-Major)

= (W1*bc(first(C-Major)) + W3*bc(third(C-Major)) + W1*bc(fifth(C-Major))) / tbc

= (W1*bc(C) + W3*bc(E) + W1*bc(G)) / 32

= (5*bc(C) + 1*bc(E) + 3*bc(G)) / 32

= (5*6 + 1*10 + 3*0)/32

=1.25

5. Results: Given the limited candidate key set, the best fit key for the melody, The Restricted E, is E-Minor. A-Minor is the second best fit, C-Major is the third best fit, and G-Major is the fourth best candidate.

Rosita Melo's Desde El Alma:

1. Rosita Melo's Desde El Alma

2. This melody was first introduced to me in class, and I have since done multiple other assignments and work with this melody.

3.

/ D3 D1 / E1 / X1 \ D3 \ C3 \ B1 / D1 / G1 / A1 \ G1 \ E1 / X6 / G3 \ F2 / G1 \ E6 E3 \ D2 / E1 \ D3 \ C3 \ B3 \ A2 / B1 \ A3 \ G3 \ X3 / G1 \ X1 / V1 \ B6

4. Candidate key set: {E-Minor, A-Minor, G-Major, C-Major, B-Minor}

Fit(E-Minor)

= (W1*bc(first(E-Minor)) + W3*bc(third(E-Minor)) + W1*bc(fifth(E-Minor))) / tbc

= (W1*bc(E) + W3*bc(G) + W1*bc(B)) / 72

= (5*bc(E) + 1*bc(G) + 3*bc(B)) / 72

= (5*12 + 1*10 + 3*11)/72

=1.430555556

Fit(A-Minor)

```
= ( W1*bc(first(A-Minor)) + W3*bc(third(A-Minor)) + W1*bc(fifth(A-Minor)) ) / tbc
```

= (W1*bc(A) + W3*bc(C) + W1*bc(E)) / 72

= (5*bc(A) + 1*bc(C) + 3*bc(E)) / 72

= (5*6 + 1*6 + 3*12) / 72

=1

Fit(G-Major)

```
= ( W1*bc(first(G-Major)) + W3*bc(third(G-Major)) + W1*bc(fifth(G-Major)) ) / tbc
```

= (W1*bc(G) + W3*bc(B) + W1*bc(D)) / 72

= (5*bc(G) + 1*bc(B) + 3*bc(D)) / 72

= (5*10 + 1*11 + 3*13) / 72

=1.38888889

Fit(C-Major)

```
= ( W1*bc(first(C-Major)) + W3*bc(third(C-Major)) + W1*bc(fifth(C-Major)) ) / tbc
```

```
= (W1*bc(C) + W3*bc(E) + W1*bc(G)) / 72
```

= (5*bc(C) + 1*bc(E) + 3*bc(G)) / 72

```
= (5*6 + 1*12 + 3*10) / 72
```

=1

Fit(B-Minor)

```
= (W1*bc(first(B-Minor)) + W3*bc(third(B-Minor)) + W1*bc(fifth(B-Minor))) / tbc
```

```
= (W1*bc(B) + W3*bc(D) + W1*bc(X)) / 72
```

```
= ( 5*bc(B) + 1*bc(D) + 3*bc(X) ) / 72
```

```
= (5*11 + 1*13 + 3*11) / 72
```

```
=1.40277778
```

5. Results: Given the limited candidate key set, the best fit key for the melody, Desde El Alma, is E-Minor. B-Minor is the very close second best fit, G-Major is the third best fit. C-Major and A-Minor are tied for the fourth best candidate.