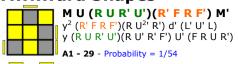# Andy Klise's Orient Last Layer Guide
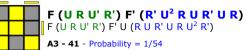
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Green = R U R' U' Family, **Blue** = R U R' U R U² R' Family, **Orange** = R F' R' F Family
ĭ = inverse, ɱ = mirror, ʀ = reverse rotation, ~ = minimal difference, ** = this algorithm may be faster
Try to recognize each pattern by viewing the fewest number of faces

All Edges Oriented Correctly

(R' U' R U R' U² R)   ĭ
y (R U² R' U' R U' R')
OCLL6 - 26 - Probability = 1/54

(R' U² R U R' U R)   ĭ
y (R U R' U R U² R')
OCLL7 - 27 - Probability = 1/54

(R U R' U)(R U' R' U)(R U² R')
(R' U' R U')(R' U R U')(R' U² R)
y (R U² R')(U' R U R')(U' R U' R')
OCLL1 - 21 - Probability = 1/108

R U2' R2' U' R2 U' R2' U² R
f (R U R' U') f' F (R U R' U') F'
OCLL2 - 22 - Probability = 1/54

x (R' U')(L U)(R U' L' U)
y² (r U R' U')(r' F R F')
y x' (R U R') D (R U' R') D' x
y² R² R2' D' (R U2' R) D (R U2' R)
OCLL4 - 24 - Probability = 1/54

(R' F)(R U R')(R U' F')(R U)...

(R' **F**)(R B')(R' **F'**)(R B)
y F' (r U R' U')(r' F R)
x' D (R U R) D' (R U' R') x
OCLL5 - 25 - Probability = 1/54

R² D (R' U2' R) D' (R' U2' R')
y² R² R2' D' (R U2' R) D (R U2' R)
OCLL3 - 23 - Probability = 1/54

Solved
OCLL8 - 58 - Probability = 1/216

Corners Correct, Edges Flipped

(r U R' U') M (U R U' R')   ĭ
(r U R' U') r' R (U R U' R')
(M U M') U² (M U M')
E1 - 28 - Probability = 1/54

(R U R' U') M' (U R U' r')   ĭ
(R U R' U') r R' (U R U' r')
E2 - 57 - Probability = 1/108

P-Shapes

(R' U' F)(U R U' R') F' R   ɱ
y' (F R' F' R) U R (U R' U' R) U' R'
P1 - 31 - Probability = 1/54

(L U F')(U' L' U L) F L'
F U R U' F' (r U R' U') r'
y² R U B' (U' R U) B R'
P2 - 32 - Probability = 1/54

F' (U' L' U L) F   ɱ
y² f' (L' U' L U) f
R' U' (F R' F' R) U R
P3 - 43 - Probability = 1/54

F (U R U' R') F'   ɱ
y² f (R U R' U') f'
P4 - 44 - Probability = 1/54

W-Shapes

(R' U' R U')(R U R U) x' (R U' R' U) x   ~ʀ
W1 - 36 - Probability = 1/54

(R U R' U)(R U' R' U')(R' F R F')
W2 - 38 - Probability = 1/54

Squares

(r' U² R U R' U r)   ʀ
S1 - 5 - Probability = 1/54

(r U² R' U' R U' r')   ʀ
S2 - 6 - Probability = 1/54

L Shapes

F (R U R' U')(R U R' U') F'   ɱ
L2 - 48 - Probability = 1/54

F' (L' U' L U)(L' U' L U) F
R' U' (R' F R F')(R' F R F') U R
L1 - 47 - Probability = 1/54

(R B')(R2' F) R² (B R2')(F' R)   ɱ
L3 - 49 - Probability = 1/54

(R' F)(R² B') R2' (F' R²)(B R')
L4 - 50 - Probability = 1/54

r' U² (R U R' U') R U' R u r   ʀ
y' r' U R' U' (R' F R F') R U² r
L5 - 53 - Probability = 1/54

r U² (R' U' R U) R' U' R U' r'   ʀ
y r U R' U (R U' R' U) R U2' r' **
L6 - 54 - Probability = 1/54

Fish Shapes

(R' U' R) y' x' (R U R' F)(R U R') x y
(R U R' U') R' F R² U R' U' F'
F1 - 9 - Probability = 1/54

(R U R') y (R' F R U')(R' F' R)
(R' U' R U) R B' R² U' R U B
F2 - 10 - Probability = 1/54

(R U2')(R2' F R F')(R U2' R')
F3 - 35 - Probability = 1/54

F (R U')(R' U' R U) R' F'
(F R' F' R)(U R U' R')
F4 - 37 - Probability = 1/54

Awkward Shapes

M U (R U R' U')(R' F R F') M'
y² (R' F R F')(R U2' R') d' (L' U' L)
y (R U R')(U' R' F R F') U' (F R U R')
A1 - 29 - Probability = 1/54

F R' F R² U' (R' U' R U) R' F²
F U (R U') x' (U R) D' (R U' R') x
y² (R2' U R') B' (R U' R2' U)(R B R')
A2 - 30 - Probability = 1/54

F (U R U' R') F' (R' U² R U R' U R)   ĭ
F (U R U' R') F' U (R U R' U R U2' R')
A3 - 41 - Probability = 1/54

(R' U' R U R' U² R) F (R U R' U') F'
y (R U² R' U' R U R2') y (R U R' U') F'
A4 - 42 - Probability = 1/54

Lightning Bolts

(r U R' U R U2' r')   ʀ
B1 - 7 - Probability = 1/54

(r' U' R U' R' U2' r)
B2 - 8 - Probability = 1/54

r U R' U (R' F R F') R U2' r'   ~ʀ
y' F' (L' U' L U) F U F (R U R' U') F'
y² (r' R2 U R' U)(R U2' R' U R' U r)
B3 - 11 - Probability = 1/54

r' U' R U' x' (R U R' U) x R' U² r   ~ɱ
y' F (R U R' U') F' U F (R U R' U') F' **
y² (r R² U R' U')(R' U2')(R U R r')
B4 - 12 - Probability = 1/54

(L F')(L' U' L U) F U' L'   ɱ
y² R B' (R' U' R U) B U' R'
B5 - 39 - Probability = 1/54

(R' F)(R U R' U') F' U R
B6 - 40 - Probability = 1/54

T-Shapes

(R U R' U')(R' F R F')
T1 - 33 - Probability = 1/54

F (R U R' U') F'
T2 - 45 - Probability = 1/54

C-Shapes

(R U R' U') B' (R' F R F') B
(R U R' U') x D' (R' U R U') D x'
C1 - 34 - Probability = 1/54

R' U' (R' F R F') U R
(R U) x' (R U' R' U) x (U' R')
C2 - 46 - Probability = 1/54

I Shapes

f (R U R' U')(R U R' U') f'
y² F (U R U' R')(U R U' R') F'
I1 - 51 - Probability = 1/54

r' U' (r U' R' U)(R U' R' U)(R r') U r
r' U' (r U' R' U)(R U' R' U)(R r') U r
F (R U R' U') R F' (r U R' U') r'
I4 - 56 - Probability = 1/108

(R U R' U)(R U') y (R U' R' F') y'
R' U² R² U (R U' R U2') x' (U' R' U)
I2 - 52 - Probability = 1/54

R U² R2' U' (R U' R' U2')(F R F')
I3 - 55 - Probability = 1/108

Knight Move Shapes

x' (R U' R')(F' R U R) x y (R' U R) y'
y² F U R U² (R' U' R U) R' F'
K1 - 13 - Probability = 1/54

(R' F R)(U R' F' R) y' (R U' R')
K2 - 14 - Probability = 1/54

(r U r')(R U R' U')(r U' r')   ʀ
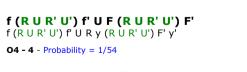(L F L')(R U R' U')(L F' L')
K4 - 16 - Probability = 1/54

(r' U' r)(R' U' R U)(r' U r)   ʀ
y² (R' F R)(L' U' L U)(R' F R)   ɱ
(L' B' L)(R' U' R U)(L' B L)
K3 - 15 - Probability = 1/54

No Edges Flipped Correctly

(R U2')(R2' F R F') U² (R' F R F')
O1 - 1 - Probability = 1/108

F (R U R' U') F' f (R U R' U') f'
O2 - 2 - Probability = 1/54

f (R U R' U') f' U' F (R U R' U') F
y² F (U R U' R') F' R y (R U R' U') F' y'
O3 - 3 - Probability = 1/54

f (R U R' U') f' U F (R U R' U') F'   ~
f (R U R' U') f' U R y (R U R' U') F' y'
O4 - 4 - Probability = 1/54

(r U R' U R U² (r2') U' R U' R' U2' r)
y² F (R U R' U) F' y' U² (R' F R F')
O6 - 18 - Probability = 1/54

M U (R U R' U') r (R2' F R F')
(r' U² R U R' U (r2') U2' R' U' R U' r)
O7 - 19 - Probability = 1/54

(R U R' U)(R' F R F') U² (R' F R F')
O5 - 17 - Probability = 1/54

M U (R U R' U') M² (U R U' r')
(r' R) U (R U R' U')(r2' R2')(U R U' r')
(M' U² M') U² (M' U M) U² (M U2' M)
O8 - 20 - Probability = 1/216