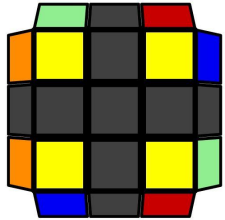
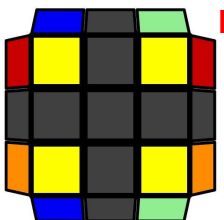


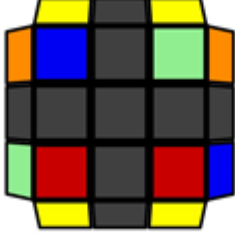
At least two algorithms are listed for every case. The first one will preserve edge orientation and the second one will flip edges. **The bolded algorithm will be the one that I can execute the fastest, so if you are learning CMLL, I recommend learning the bolded ones first. Additional algs will be below.** If you find any mistakes, or any better algorithms than the one I use, please contact me on Facebook or YouTube.

Video showing execution: <http://bit.ly/2j5WX86>

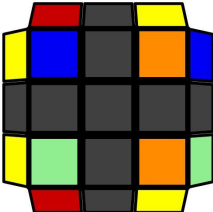
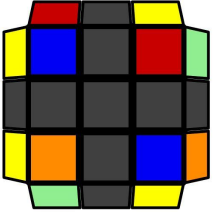
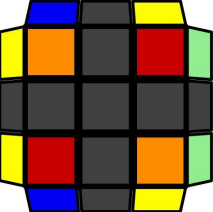
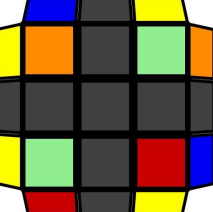
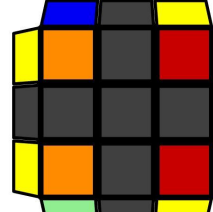
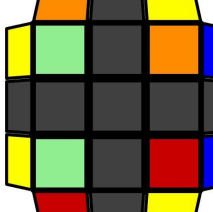
O

 Adjacent Swap R U R' F' R U R' U' R' F R2 U' R' r U R' F' R U R' U' R' F R2 U' r' R U R' U' R' F R2 U' R' U' R U R' F' r U R' U' r' F R2 U' R' U' R U R' F' (U) r U' L U2 R' U R U2 r' L'	 Diagonal Swap F R U' R' U' R U R' F' R U R' U' R' F R F' r' U' r' D' r U' r' D r U' r' D' r U' r' D r2 F R U' R' U' R U R' F' r U R' U' r' F R F' F R' F R2 U' R' U' R U R' F' R U R' U' F'
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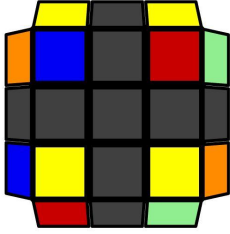
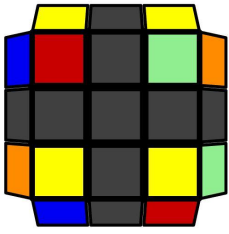
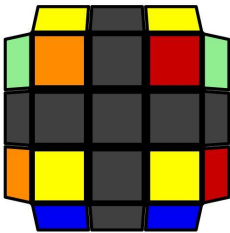
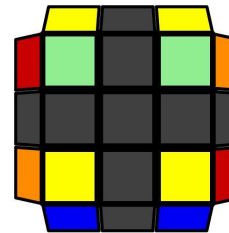
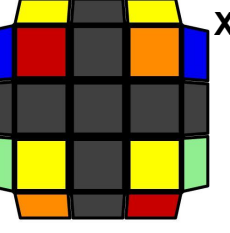
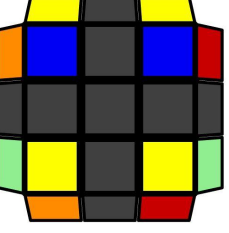
H

 Columns (R U2 R' U') (R U R' U') R U' R' r U2 R' U' R U R' U' R U' r' (U) R U R' U R U' R' U R U2' R'	 Rows F R U R' U' R U R' U' R U R' U' F' R' F R U2' R' F' R U F R U R' U F'
 Column (U) F R U' R' U R U2 R' U' R U R' U' F' (U) R U2' R2' F R F' U2 R' F R F'	 Row (U') R U R' U R U' r' F R' F' r (U2) r U' r2' D' r U' r' D r2 U r' r U' r' F U2' r2' F r U' r

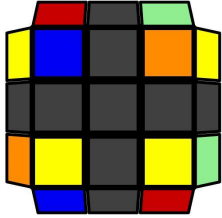
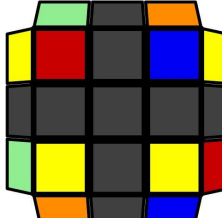
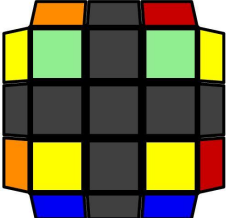
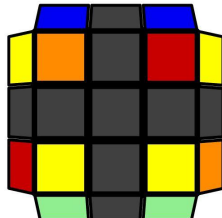
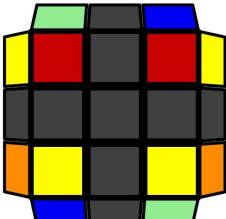
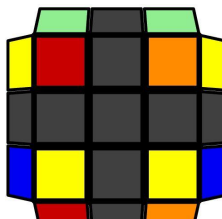
Pi

 Right Bar R U2' R2' U' R2 U' R2' U2' R F R U R' U' R U R' U' F' f R U R' U' R U R' U' f' (U2) F U R U' R' U R U' R' F' (U2) F' L' U' L U L' U' L U F r' U r2 U' r2' U' r2 U r' r U' r2' U r2 U r2' U' r R' U2 r U' r' U2 r U r' U2 R	 Back Slash R' F2 R U2' R U2' R' F2 U' R U' R' (U) (F R' F' R) U2 (R U' R' U R U2' R') (U) R U2 R' U' R U' R2 U L U' R U L'
 X Checkerboard R U2' R' U r' F2 R F R' F' R F' M' (U') R' F R U F U' R U R' U' F'	 Forward Slash (U') R' U2 R U R' U R2 U' L' U R' U' L R U2 R' U' R U R' U2' R' F R F'
 Columns (U2) r' F R F' r U' R' U' R U' R' (U') r U' r2' D' r U r' D r2 U r' (U2) R' U R U' R2' F R2 U R' U' F' R R' U L U' R U' L' U' L U' L'	 Left Bar (U) R U2 R' U' F' R U2 R' U' R U' R' F R U' R' (U') R' U' R' F R F' R U' R' U2 R (U2) R' U' R U' R' U F' U F R

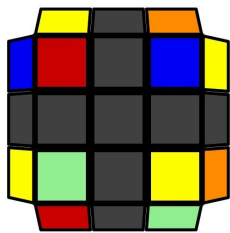
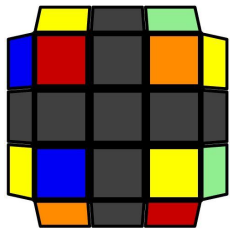
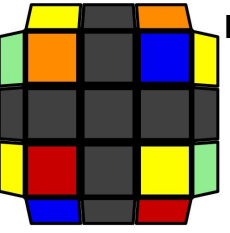
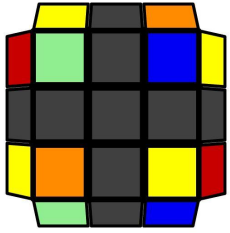
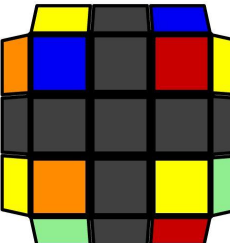
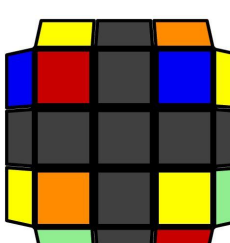
U

 Forward Slash (U2) R2 D R' U2 R D' R' U2 R' r U' r' U' r U' r' U' F' U2' F	 Back Slash R2' D' R U2 R' D R U2 R R' F R U R' F R U F U2' F'
 Front Row (U) R U2' R2' U' R2 U' R' U R' U' R U R' U R R2' F U' F U F2 R2 U' R' F R R' U' R U' R' U2' R2 U R' U R U2' R'	 Rows R' F R U' R' U' R U R' F' R U R' U' R' F R F' R (U') F R2 D R' U R D' R2' U' F'
 X Checkerboard R U R' U' R' F2 R2 U' R' U' R U R' F2 (U2) r U' r' U' r' D' r U' r' D r (U2) R' F U' R F R' U R F'	 Back Row R U' R' U' R U R D R' U R D' R2 (U') F R U R' U' F' (U') f R U R' U' f' (U) F U R U' R' F'

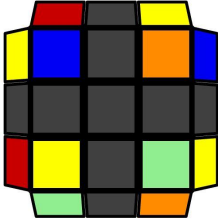
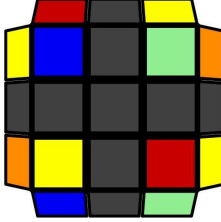
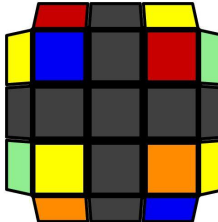
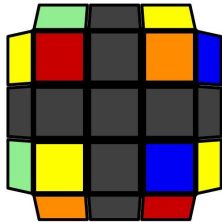
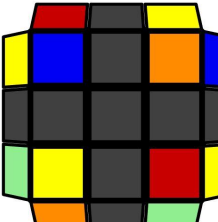
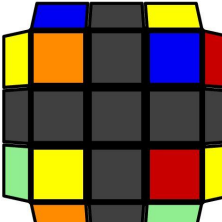
T

 Left Bar (U') r U R' U' r' F R F' (U') R U R' U' R' F R F'	 Right Bar (U) l' U' L U l F' L' F (U) L' U' L U l F' L' F (U') F R U' R' U R U R' F'
 Rows (U') R U R' U R U' R' U R' U' R2 U' R2' U2' R F R' F R2 U' R' U' R U R' F2 R U2' R' U' R U' R2' U2' R U R' U R	 Front Row R' U r U2' R2' F R F' r r' U r U2' R2' F R F' R
 Back Row (U2) F R U R' U' R U' R' U' R U R' F' r' D' r U r' D r U' r U r'	 Columns R' U R2 D r' U2 r D' R2' U' R (U2) r2' D' r U r' D r2 U' r' U' r (U2) r U' r2' D' r U2 r' D r2 U r'

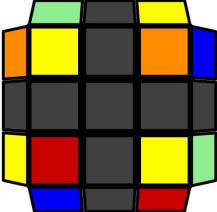
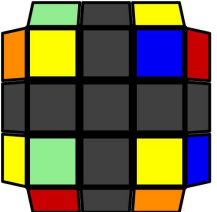
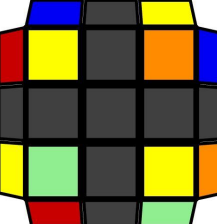
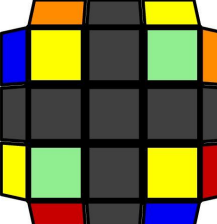
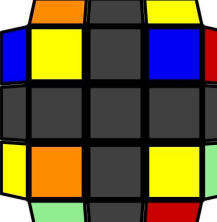
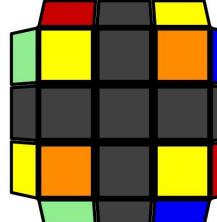
S

 Left Bar (U) R U R' U R U2 R' (U) r U R' U R U2 r'	 X Checkerboard (U) L' U2 L U2' I F' L' F M' (U) L' U2 L U2' L F' L' F
 Forward Slash (U) M F R' F' R U2 R U2' r' (U) F R' F' R U2 R U2' R'	 Columns (U2) R' U' R U' R2' F' R U R U' R' F U2' R (U) R U R' U' R' F R F' R U R' U R U2' R' R U R' U R U' R D R' U' R D' R2'
 Right Bar (U') R U R' U L' U R U' L U2 R' (U') R U R' U R' F R F' R U2' R'	 Back Slash (U) R U' L' U R' U' L (U) r U' r' F R' F' R (U') L U' R' U L' U' R

As

 Right Bar (U) R' U' R U' R' U2' R (U) r' U' R U' R' U2' r (U2) R U2 R' U' R U' R'	 Columns (U') R2 D R' U R D' R' U R' U' R U' R' (U') r R D R' U R D' R' U R' U' R U' r'
 Back Slash (U') M F' L F L' U2' L' U2 L M' (U') F' L F L' U2' L' U2 L	 X Checkerboard (U') R U2' R' U2 r' F R F' M' (U') R U2' R' U2 R' F R F'
 Forward Slash (U') L' U R U' L U R' (U') R' F R F' r U r' (U) R' U L U' R U L'	 Left Bar (U') R' U' R U' L U' R' U L' U2 R R' U' R U' R' U R' F R F' U R

L

 Mirror $R^2 D' R U' R' D R U R$ $(U^2) F R U' R' U' R U R' F'$ $(U') F' r U r' U' r' F r$ $(U') F' r U R' U' r' F R$	 Inverse $(U^2) F R' F' r U R U' r'$ $(U^2) F R' F' R U R U' R'$
 Pure $R U^2 R' U' R U R' U' R U R' U' R U' R'$ $R U R' U' R' F R F' R' F R F' r U r'$ $R U R' U R U' R' U R U' R' U R U^2 R'$	 Front Commutator $(U^2) R U^2 R D R' U^2 R D' R^2'$ $R U R' U R' F R F' U^2 R' F R F'$
 Diag $R' U' R U R' F' R U R' U' R' F R^2$ $(U^2) R U^2 R^2 F R F' R U^2 R'$	 Back Commutator $(U) R' U^2 R' D' R U^2 R' D R^2$ $(U^2) R U R' U' R' F R^2 U' R' U R U R' F'$