Speeding Up the Basic Rubik 3x3x3 Six Step Solution

The basic six step solution is not the fastest for speed cubing, but it can be fun to do it faster:

**Step 1:** Solve the up layer and turn the cube over for the remaining steps. If needed, move the solved portion out of the way, flip a piece, put it into position, and rotate the solved portion back. To help with quickly locating pieces, pick a color for the first face that works best for you.

**Step 2:** Instead of using the edge flipper, learn the symmetric sequence that moves an edge down counterclockwise from up to middle:

\[
edge \text{ cc-mover}, \text{ UF} \rightarrow \text{ MFL: } (U^- L^-) (U \ L) , (U \ F) (U^- F^-)
\]

**Step 3:** Before the final F-, if the right side of FR is not the top color, instead of wasting time to do F- F, repeat the (R U) (R- U-) before doing F-.

**Step 4:** Do nothing if all edges are correct, or the standard Edge Swapper if just two adjacent edges need to be swapped. Otherwise, because omitting the last move of the Edge Swapper leaves UF unchanged and cycles the other three counterclockwise, start by rotating the top to make UF correct. If UB is also correct (but UL and UR are reversed), do the first 7 Edge Swapper moves and then swap UL and UB. The other case is that UL,UB, UR need to be cycled; do the first 7 moves to cycle them counterclockwise. For clockwise, do the first 7 moves twice, or it is faster to reverse the 7 moves (easy to remember as the same R R- R R-, but interleaved with \(U^2 U^{-} U^{-}\) instead of \(U U^2\)).

\[
clockwise \text{ cycle } UL, UB, UR: (R U^2) (R^- U-) (R U^-) R-
\]

**Step 5:** If no corners are correct, learn how to tell for which orientation of the cube the corner cycle will leave things so that a counterclockwise cycle will be needed. Or, if you have identified a correct corner and a clockwise cycle of the other three is needed, instead of doing the corner cycle twice (three times returns the cube to where it was), save time by reversing the sequence:

\[
reverse \text{ corner cycle: } (L^- U) (R U^-) (L U) (R^- U-)
\]

**Step 6:** Every iteration of the corner rotator exchanges UFR and DFR, and repeating it 6 times returns the cube to where it was. Step 6A will use the corner rotator 2 times if the top color is on the right side of the UFR corner, or 4 times if it is on the front, in which case it is faster to do the reverse sequence 2 times (easy, start with D- instead of R- and everything follows):

\[
reverse \text{ corner rotator: } D^- R^- D R
\]