CFOP Method

The **CFOP Method** is the most widely used speedsolving method for the Rubik's Cube, especially among competitive cubers. CFOP stands for:

1. **C**ross
2. **F**2L (First Two Layers)
3. **O**LL (Orient Last Layer)
4. **P**LL (Permute Last Layer)

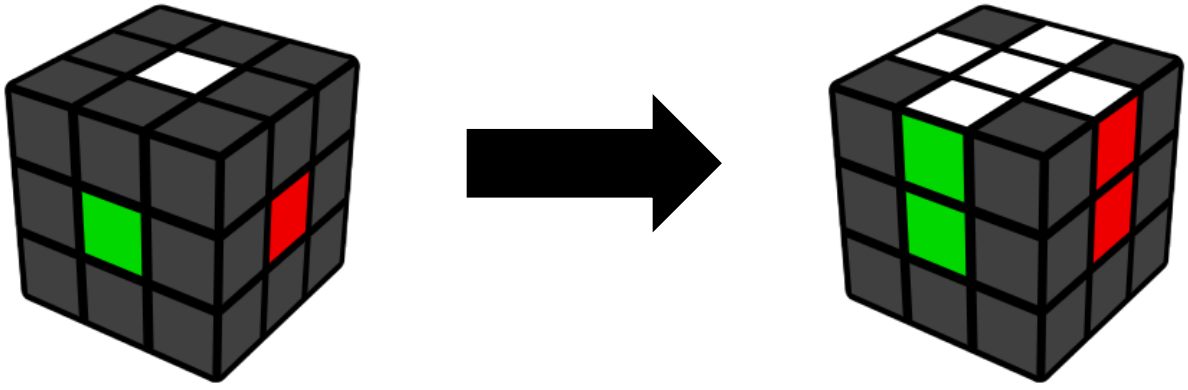
It is also sometimes called the **Fridrich Method**, named after Jessica Fridrich, who popularized and expanded it in the 1990s.

Overview of CFOP

CFOP solves the cube layer-by-layer but in a much more optimized way than beginner methods. Advanced cubers can solve the cube in under 10 seconds using CFOP.

Step	Goal	Cases
Cross	Solve 4 edge pieces on one face	intuitive
F2L	Solve first 2 layers simultaneously	41
OLL	Orient last layer pieces	57
PLL	Permute last layer pieces	21

1. Cross



The first step is solving a cross on one side, usually the white face.

Goal:

- Place 4 edge pieces correctly around the center
- Match side colors with center pieces

Example:

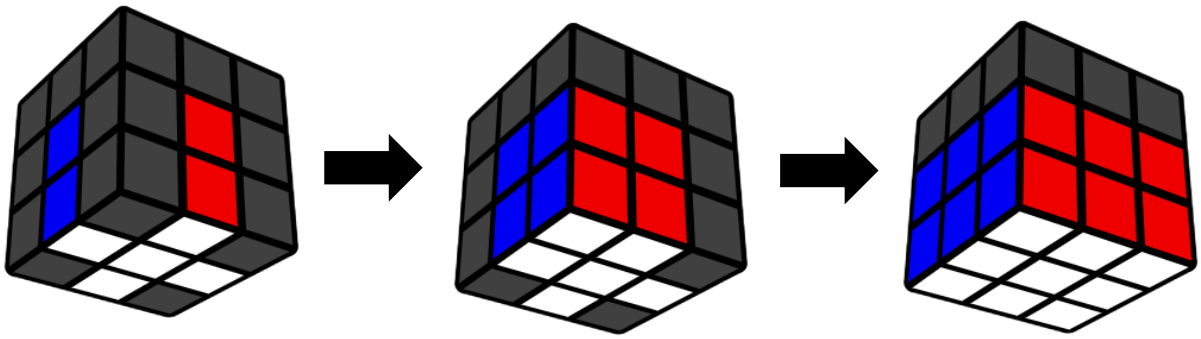
- White-red edge goes between white and red centers
- White-blue edge goes between white and blue centers

Advanced techniques:

- Solve the cross on the bottom instead of top
- Plan the entire cross during inspection
- Use efficient moves (usually under 8 moves)

Top cubers can complete the cross in 1–2 seconds.

2. F2L (First Two Layers)



Instead of solving corners and edges separately like beginner methods, F2L pairs a corner and edge together and inserts them simultaneously.

Goal:

- Solve the first two layers in 4 corner-edge pairs

Why it matters:

- Huge speed improvement
- Fewer moves
- Better flow and lookahead

There are:

- Basic intuitive F2L
- Advanced F2L algorithms
- Rotationless F2L
- Edge control techniques

Most speedcubers first learn intuitive F2L before memorizing advanced cases.

F2L Pair Example

You pair:

- White-red-blue corner
- Red-blue edge

Then insert them into their slot together.

There are 41 f2l cases but 100+ if you count mirrors, rotations, and advanced variations separately

For me personally these are the YouTubers who provide you with the best algorithms for the F2L, OLL and PLL

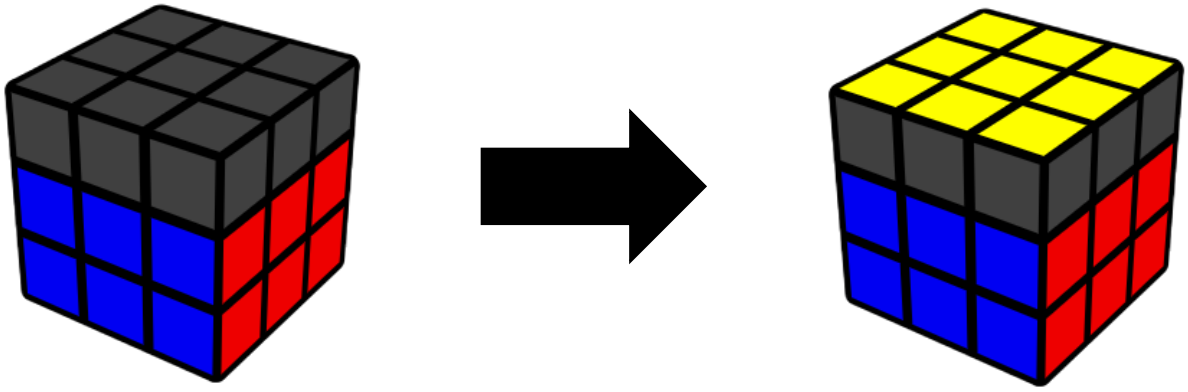
- J Perm — probably the best for clear beginner explanations
- CubeHead —the best advanced algorithms

So you could go check their tutorials. I will put them even here.

J Perm:https://www.youtube.com/watch?v=Ar_Zit1VLG0&t=106s

CubeHead: https://www.youtube.com/watch?v=3tYj-9f4dA0 He even provided you with the option to download them for free https://www.cube.academy/intuitive-f2l-algs

3. OLL (Orient Last Layer)



OLL makes the entire last layer face one color (usually yellow).

At this stage:

- Pieces may still be in the wrong positions
- Only orientation matters

There are:

- **57 full OLL algorithms**
- 2-look OLL for beginners cubers - **10 algorithms**

2-look OLL breaks the process into:

1. Orient edges -3 algorithms
2. Orient corners -7 algorithms

It has less algorithms but you will need to do 2 algorithms instead of one to solve the OLL

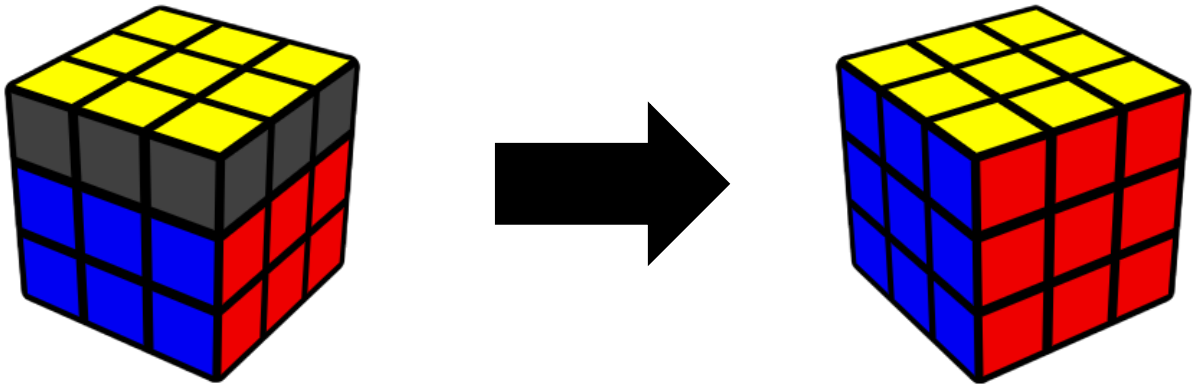
Advanced cubers memorize all 57 algorithms.

And again the best algorithms for OLL

J perm – 2-look (for beginners)
https://www.youtube.com/watch?v=GhmYBgLoQQg

CubeHead – Ful OLL(for intermediates)
https://www.youtube.com/watch?v=Q947zZRYMdg

4. PLL (Permute Last Layer)



PLL moves the last layer pieces into their correct positions.

Goal:

- Finish the cube completely

There are:

- **21 PLL algorithms**
- 2-look PLL for easier learning – **6 algorithms**

Best algorithms for PLL:

J Perm (for beginners)

https://www.youtube.com/watch?v=f_Yor-ydZjs

CubeHead (for intermediates)
https://www.youtube.com/watch?v=QVXKNAjl_0k

And if you followed and learned all of the algorithms

Congratulations you have solved the 3x3 by the CFOP method

Why CFOP Is Popular

Advantages

- Extremely fast
- Used by most world-class speedcubers
- Huge learning resources online
- Efficient move count
- Great for competitions

Disadvantages

- Requires lots of memorization
- Full CFOP has 78 algorithms

Important CFOP Concepts

Lookahead

Tracking the next pieces while solving current ones.

Finger Tricks

Efficient finger movements that reduce hand repositioning.

Examples:

- Flicking U moves with index fingers
- Push/pull techniques
- Double flicks

TPS (Turns Per Second)

How fast a solver turns the cube.

Fast cubers often average:

- 6–10 TPS

Recognition

Quickly identifying cases before performing algorithms.

Recognition is critical for:

- OLL
- PLL
- F2L efficiency

World-Class CFOP Solvers

Many top cubers use CFOP, including:

- Max Park
- Feliks Zemdegs
- Tymon Kolasiński
- Yiheng Wang

Typical Solve Times by Skill Level

Skill Level	Average Time
Beginner CFOP	1–2 minutes
Intermediate	20–40 seconds
Advanced	10–20 seconds
Elite	Sub-10
World Class	Sub-6 averages