

Name	Kashyap Vekariya
Div	5(G9)
Subject	Digital Image Processing
Roll No	22BCP346

## Parameter options for resize operation

### 1) Speed:

NEAREST is the fastest.  
BILINEAR is moderate.  
BICUBIC is slower than bilinear.  
LANCZOS is the slowest.

### 2) Quality:

LANCZOS generally produces the highest quality.  
BICUBIC follows with high quality.  
BILINEAR offers moderate quality.  
NEAREST has the lowest quality.

### 3) Use Cases:

NEAREST: Best for pixel art where speed is prioritized over quality.  
BILINEAR: Suitable for general-purpose resizing with moderate quality.  
BICUBIC: Ideal for general-purpose resizing with higher quality.  
LANCZOS: Best for high-quality resizing, especially when downscaling images.

### 4) Visual Differences:

NEAREST: May appear blocky or pixelated.  
BILINEAR: Smoother than nearest-neighbor but may still be slightly blurry.  
BICUBIC: Smoother and sharper than bilinear, with fewer artifacts.  
LANCZOS: Sharpest and most detailed, with minimal blurring or artifacts.

## 5) Advantages and Disadvantages:

### NEAREST

Advantages: Fastest processing time; simple implementation.

Disadvantages: Low-quality output; blocky appearance.

### BILINEAR

Advantages: Moderate quality; smoother than nearest-neighbor.

Disadvantages: Can be slightly blurry; slower than nearest.

### BICUBIC

Advantages: Higher quality; smoother and sharper output.

Disadvantages: Slower than bilinear; more computationally intensive.

### LANCZOS

Advantages: Highest quality; minimal artifacts; excellent for downscaling.

Disadvantages: Slowest processing time; more complex implementation.