1. SEPARAR EM ALTA E BAIXA RESOLUÇÃO

Logotipo

O conteúdo gerado por IA pode estar incorreto.

l\_norm = np.linalg.norm(main\_vector, ord=np.inf)

# Normalize each element of the vector

normalized\_x = np.abs(main\_vector) / l\_norm

# Identify the indices where the normalized value is greater than or equal to lambda

indices = np.where(normalized\_x >= lambda\_j)[0]

non\_indices = np.where(normalized\_x < lambda\_j)[0]

2. ALTA RESOLUÇÃO

Diagrama

O conteúdo gerado por IA pode estar incorreto.

# magnitudes dos especiais

for i in indices:

x\_q\_temp[i] = np.abs(x[i])

# Q(.) com b\_j bits

x\_q0 = uniform\_quantization(x\_q\_temp, b\_j)

# recoloca o sinal: alta resolução com b\_j bits (magnitudes quantizadas) + 1 bit (sinal)

for i in indices:

x\_q[i] = np.sign(x[i]) \* x\_q0[i]

3.BAIXA RESOLUÇÃO

Texto, Carta

O conteúdo gerado por IA pode estar incorreto.

if np.abs(x\_min) > 0 and x\_max > 0:

x\_min\_me = min(x\_max, np.abs(x\_min))

else:

x\_min\_me = max(x\_max,0, np.abs(x\_min))

if x\_min\_me < 1e-10:

x\_min\_me = 1e-4

# aplica ± x\_min\_me/2 aos não-especiais (apenas sinal ⇒ 1 bit)

for i in range(len(main\_vector)):

if x\_q[i] == mynum: # ainda não preenchido ⇒ não-especial

x\_q[i] = (np.sign(x[i]) == 1)\*x\_min\_me/2 - (np.sign(x[i]) == -1)\*x\_min\_me/2

4. AQUILA

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# Compute the difference vector

    y = x - x\_prev

    # Compute the radius R

    R = np.max(np.abs(y))

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    b = np.floor(np.log2(1 + R\*np.sqrt(d)/l.norm(y, 2) ))

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# Number of quantization levels

    L = 2 \*\* b

    # Quantization step size

    delta = 2 \* R / (L - 1)

    # Quantize the vector

    y\_clipped = np.clip(y, -R, R)  # Ensure values are within [-R, R]

    quantized = np.round(y\_clipped / delta) \* delta

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x\_q = y\_quantized + x\_prev