

# Multimedia Homework

## Comments:

### In arithmetic:

- As the block size decrease, image decoding & compression becomes better
- And as block size increase, image decoding & compression becomes worse (may go under 1 which expands size)

### In arithmetic and LZ77:

- Compression becomes better as we take advantage of the difference image.
- It may be bad if the pixel difference in image is high (image is not smooth **LIKE: Omaha**).

## Results:

### 1) Huffman

#### Number of bits without decorrelation:

Sena: 449770 bits

Sensin: 428690 bits

Earth: 314018 bits

Omaha: 456737 bits

#### Number of bits with decorrelation:

Sena: 351687 bits

Sensin: 455872 bits

Earth: 351672 bits

Omaha: 692421 bits

## 2)Arithmetic

### M=1:

Sena: -Number of symbols per tag: 2228224

-Compression ratio: 4.25

Sensin: -Number of symbols per tag: 2228224

-Compression ratio: 4.25

Earth: -Number of symbols per tag: 2228224

-Compression ratio: 4.25

Omaha: -Number of symbols per tag: 2228224

-Compression ratio: 4.25

### M=3:

Sena: - Number of symbols per tag: 742764

-Compression ratio: 1.41671

Sensin: -Number of symbols per tag: 742764

-Compression ratio: 1.41671

Earth: -Number of symbols per tag: 742764

-Compression ratio: 1.41671

Omaha: -Number of symbols per tag: 742764

-Compression ratio: 1.41671

## M=10:

Sena: -Number of symbols per tag: 222836

-Compression ratio: 0.425026

Sensin: -Number of symbols per tag: 222836

-Compression ratio: 0.425026

Earth: -Number of symbols per tag: 222836

-Compression ratio: 0.425026

Omaha: -Number of symbols per tag: 222836

-Compression ratio: 0.425026

### **3)LZ77**

**With S=1024 T=256 A=256**

#### **Before decorrelation:**

Sena: -Number of bits: 629503

-Compression ratio: 0.83286

Sensin: -Number of bits: 432651

-Compression ratio: 1.2118

Earth: -Number of bits: 750433

-Compression ratio: 0.698647

Omaha: -Number of bits: 713545

-Compression ratio: 0.734765

#### **After decorrelation:**

Sena: -Number of bits: 521536

-Compression ratio: 1.00528

Sensin: -Number of bits: 598676

-Compression ratio: 0.875746

Omaha: -Number of bits: 775228

-Compression ratio: 0.676302

Earth: -Number of bits: 447354

-Compression ratio: 1.17198