I = \log_2 \frac{1}{p}

<table>
<thead>
<tr>
<th>Activity</th>
<th>Bits/Sec</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes, No</td>
<td>1</td>
</tr>
<tr>
<td>Key Stroke</td>
<td>6</td>
</tr>
<tr>
<td>Telephone</td>
<td>1200</td>
</tr>
<tr>
<td>Typed Page</td>
<td>9000</td>
</tr>
<tr>
<td>Video Frame</td>
<td>1,250,000</td>
</tr>
<tr>
<td>Human</td>
<td>\approx 10</td>
</tr>
</tbody>
</table>

**Noise**
\[ 16 \times 16 = 256 \text{ Bits} \]
\[ 2^{256} \approx 10^{80} \text{ Different patterns} \]
24 Bits from Computer

X, Y Generator

1 of 16 Select

4 Bits

D/A → Red

D/A → Green

D/A → Blue

X + C

C'
$TT^{-1} = I$
Output

---

Analog

Digital

\[ \frac{1}{2^N} \]

Error

\[ R.M.S. = \sqrt{\frac{\int_0^1 \left( \frac{tV}{2N} \right)^2 dt}{\int_0^1 dt}} = \frac{1}{\sqrt{12}} \frac{V}{N} \]

5 Bits \( \approx \) 40 dB
108,000 frames per hour
Parallel Architecture
Score:
Camera #1
Camera #2

5 7
600 700 2000 2100
Instructions

Add
Subtract
Multiply
Divide
Input
Output

Go to
Read Memory
If, then ... Else
Clear
Store
\[ V(t) = f_n [x(t), y(t)] \]

102.5 ns Delay per Element
Up to 100 Elements per Pipeline

\[ E_1 : X+C_x \quad E_{1}' : X+C_{x'} \quad E_{1}'' : X+C_{x''} \]
\[ Y+C_y \quad Y+C_{y'} \quad Y+C_{y''} \]
Mc Arthur SAID

Video In

ANALOG to DIGITAL CONVERTER

SAMPLE and HOLD

CLOCK

H-LOCKED CLOCK OSCILLATOR

H Spacing

DIGITAL to ANALOG CONVERTER

6 bits

Video Out