Data Compression and Data Selection in Human Vision

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The raw visual inputs give many megabytes of data per second to human eyes, but there are neural and cognitive bottle necks in human vision such that only a few dozens of bits of data per second are eventually perceived. I will talk about two processes in the early stages of visual pathway to reduce data rate. One is to compress data such that as much information as possible is transmitted to the brain given a limited information channel capacity in the visual pathway. The other is to select, through visual attention, a fraction of the transmitted information for further detailed processing, and the data not selected are ignored. See <http://www.cs.ucl.ac.uk/staff/Zhaoping.Li/prints/ZhaopingNReview2006.pdf> for details.