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In this video I would like to give you some principles of the human reading process.
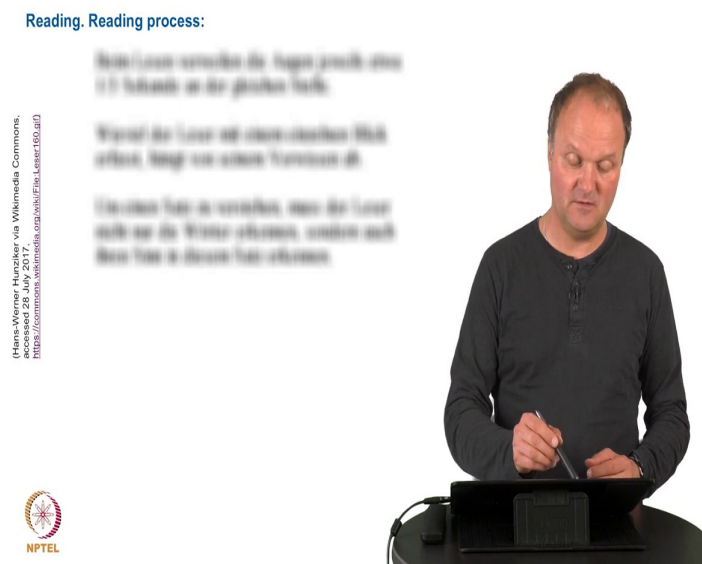
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Actually the reading process is not as continuous as it seems. Of course we are somehow following the lines of characters in a text but this does not happen continuously.

But it happens with fixations and saccades. Saccades are short, fast jumps between the fixations. And the fixations are the times when we keep our eye focused constant for approximately 250 to 400 milliseconds.

The saccades, they follow approximately the lines and the line breaks; that is we read through the text as the characters indicated. But during a fixation we can only fixate approximately 5 characters sharply.

That means if you have a very long word, this cannot be covered by one fixation alone but we have a saccade in between. We have a jump of 2 different fixations. Let us watch

(Refer Slide Time: 01:22)

how this happens. So you can see it here.

It is German text which illustrates approximately where we fixate and you see that all the rest is vague, is unclear to us. But still if you are able to recognize German language you are able to understand the text by filling in the gaps between and by combining the information as you see it here.

Now this combination does not strictly happen left to right and top to down. It is an iterative process;

(Refer Slide Time: 01:58)

Reading. Reading with feedback loops:

- **Not each single word** is **fixated**
- Also **backward jump**s in eye movements (**regressions**)
- Number of regressions increases with **text complexity**

that is we have some jumps, forward jumps but also backward jumps in the movements. These are called regressions and these regressions are more frequent when the text gets more complicated.

And this illustrates that we do an understanding process in parallel to reading process and if there is understanding problem, we go back to the text and consult the text again in order to better understand what is meant by the text.

So in human reading perception, there is actually not only a recognition, but also an understanding process happening. We come to the combination of recognition and understanding process when we explain the setup of technical systems which imitate this process.