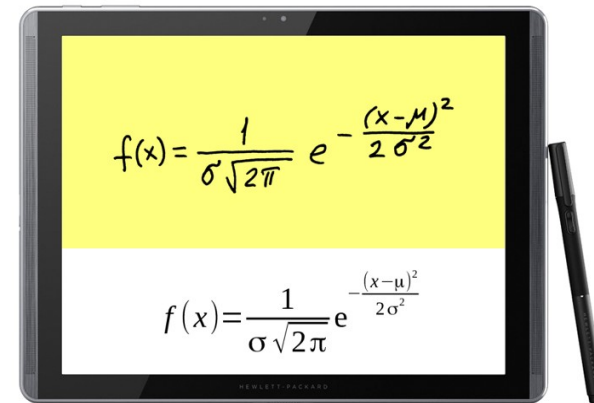


Mathematician's Assistant

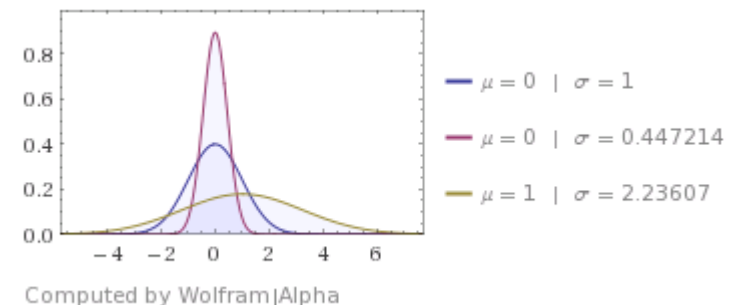
1. Write your formula with a pen on a tablet.
2. Recognize it and export into a supported text representation (*LaTeX*, *MML*).
3. Analyze it with *Wolfram Alpha*, *Octave*, etc.
Or search it on the Web.



$$\frac{e^{-\frac{(x-\mu)^2}{2\sigma^2}}}{\sqrt{2\pi}\sigma}$$

Computed by Wolfram|Alpha

Mathematician's Assistant supports a wide variety of mathematical symbols and expressions, adapts to your handwriting, makes your mathematical studies smooth and involving as they are supposed to be.



Problem

- Currently predominant *Human Machine Interfaces* (HMI) appeared in the middle of the previous century.
- Being fairly robust and simple which is an advantage for a *Machine* they are far from being intuitive and natural which is a disadvantage for a *Human*.
- Worse than that they are the source of the professional disorder known as RSI.
- Admitting that computers and mobile devices connect with our living closer and closer every year there is inevitable need to develop more intuitive and natural HMI.

Solution

- Industry has already provided technical solutions like touch and pen interfaces.
- While being intuitive and natural these interfaces still need intelligent algorithms to be robust and useful.
- Not only we provide such algorithms, but also develop an *architecture*, which goal is to connect state of the art technologies developed by leading companies together with handwriting methods of input.
- This architecture will allow seamless integration of popular mathematical and search engines with handwriting recognition and thus greatly facilitate researches of mathematicians and those who study mathematics.

Competition

MyScript Calculator

Advantages:

- robust handwriting recognition;
- supports many popular platforms.

Disadvantages:

- recognizes a limited set of formulas;
- no seamless integration with mathematical engines;
- no seamless integration with search engines.

Microsoft Math Input Panel

Advantages:

- robust handwriting recognition;
- recognizes a wide set of formulas.

Disadvantages:

- supports Microsoft Windows platform only;
- no seamless integration with mathematical engines;
- no seamless integration with search engines.

Technology

Mathematician's Assistant

Our technology is able to provide extensible tools for handwriting recognition. It uses adaptive algorithms and flexible rules supporting a wide set of formulas and mathematical symbols.

Advantages:

- recognizes a wide set of formulas;
- integrates with mathematical engines;
- integrates with search engines;
- supports many popular platforms.

Disadvantages:

- WIP.

Future

- Seamless integration with state of the art technologies allows to emerge intuitive integrated environments which provide a higher level of user interaction.
- Flexibility of the developed technology allows to extend handwriting methods of input to other fields like CADs.

Team

Alexander Bashnyakov

senior scientist,
PhD in Mathematics

Alexander Polishchuk

junior scientist,
PhD in Computer Science

Specialization:

- control systems;
- text processing.

Specialization:

- pattern recognition;
- digital signal processing;
- machine learning.