

$$f(x) = \frac{1}{\sigma\sqrt{2\pi}} e^{-\frac{(x-\mu)^2}{2\sigma^2}}$$

bell curve

## DEVELOPMENT OF METHODS FOR MATHEMATICAL MODELLING AND APPLICATIONS

In many areas we provide unique training and research in developing and using methods of mathematical modelling and applications (e.g. computer aided geometric modelling, program design).

### COMPETENCIES

- Research areas in mathematics (network theory for data structures, functional equations, mathematical statistics, methods of numerical analysis and optimization, investigation of boundary values problems nonlinear differential equations and technical application, mechanical application of partial differential equations, research in ring theory and number theory)
- Computer aided geometric modelling (curves, surfaces, solids)
- Applications such as robust estimators, robust regression, Cox regression, quality assurance, fracture mechanics, superfinishing, consumption forecast, characterisation of abrasive surfaces, estimation of tool life)
- Program design and programming
- Gamification, teaching by games
- Computer graphics
- CAD systems



### TOOLS

- Servers
- Maple software
- MATLAB software
- Computer system with high performance for numerical simulation and data processing
- 3D printer, software
- Holovision 3D display



### REFERENCES

- Miskolc Mathematical Notes journal, <http://mat76.mat.uni-miskolc.hu/mnotes/>
- ALCOA-KÖFÉM Kft. Foundry: Sampling from delivered scrap
- HOLCIM: Estimation of error limits for inventory assessment of bulk materials
- ALCOA-KÖFÉM Kft. Foundry: Processing of flatness measurement data of aluminium rolling billets by the method of mathematical statistics
- MOL Földgázszállító Zrt.: Investigation of gas consumption forecasting systems
- MOL Földgázszállító Zrt.: Development of a new measurement procedure to determine natural gas stratification
- Mátrai Erőmű Zrt.: Prediction technology review of milling disc excavators, development of new dips