# Faculty of Mathematics and Information Science

## About the faculty

Active research in the following disciplines:

*Information science:*
- computer graphics and computer geometry CAD/CAM
- parallel and distributed processing
- computer science in medicine and tomography
- databases (big data)
- neural networks
- artificial intelligence

*Mathematics:*
- metric geometry
- projective geometry
- numerical methods in linear algebra
- statistics
- universal algebra
- real and complex analysis
- multivalued analysis
- differential geometry including space-time geometry
- financial mathematics
- stochastic processes
- probability theory
- differential equations and integral equations
- graph theory
- singularity theory
- algebraic topology
- dynamical systems
- use of algebra in quantum mechanics

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## People involved

### dr Przemysław Dobrowolski

*Topics of interest:*
- computer graphics
- robotics
- computational geometry (intersections, triangulations)
- algebraic foundations in CAD/CAM

### dr Joanna Porter-Sobieraj

*Topics of interest:*
- computer graphics
- robotics
- computational geometry (multidimensional data processing)
- parallel data processing

## Students

- approximately **100** new BSc students per year
- approximately **40** new Msc students per year
- mostly individual programmes of courses
- **Bsc** thesis is assigned to a team of two or three students and realised from October to January
- **Msc** thesis is an individual work and realised all the time – can be started at any time
- students are obliged to take practices during summer vacations (1-3 months)

**Interested students:**
- Jakub Abelski
- Adam Felis
- Jakub Sala

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**Current research and cooperation:**

1) "*Using parallel processing in relativistic hydrodynamic simulation*"
together with Faculty of Physics

2) "*New data intensive algorithms and structures for GPU processors*"

3) "*Evaluation of the usefulness of exact methods to motion planning in configuration space*"

*4) "Design of methods and algorithms for describing geometry in CAD/CAM systems"*

*5) "Design of methods and algorithms for movement simulation in CAD/CAM systems"*

*6) "Design of algorithms and methods for interactive trajectory design in rigid-body configuration spaces"*

*7) "Design of algorithms and methods of finding a motion path in configuration spaces of rigid-bodies and simple kinematic chains"*