Topic: Biomedical Image Analysis

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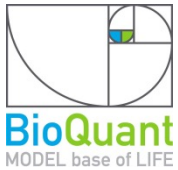
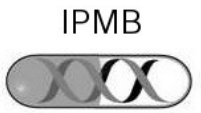
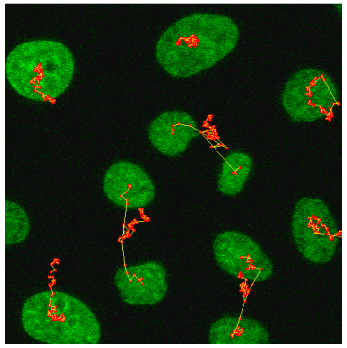
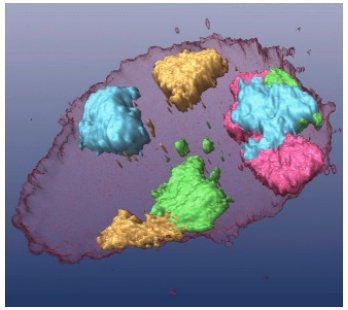
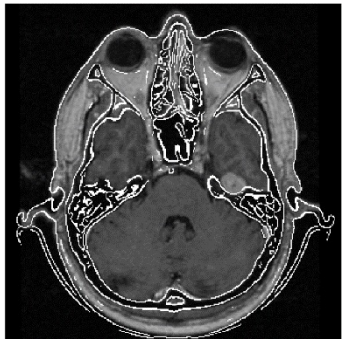


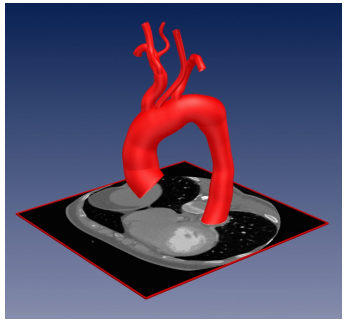


Biomedical Image Analysis









Biomedical Computer Vision Group (Head: Karl Rohr)

Automated analysis of biological and medical images

Biological Image Analysis

Segmentation, tracking, registration, classification of cells

Medical Image Analysis

Image registration, vessel segmentation, landmark localization

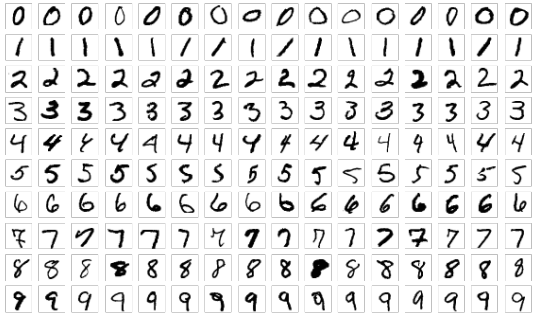
Applications:

High-throughput screens, Cell migration, Cell division,
Particle motion analysis, Virus infection, Nuclear organization

Biomedical Image Analysis

Human Face, Digit, and Clothes Recognition

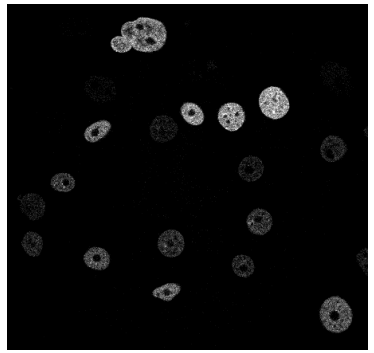
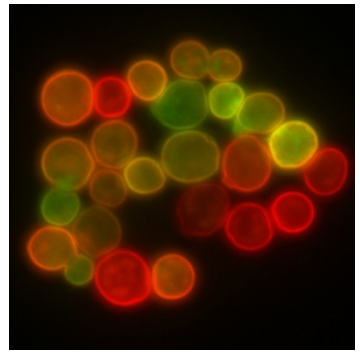
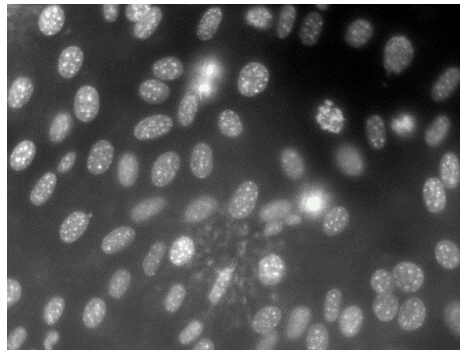
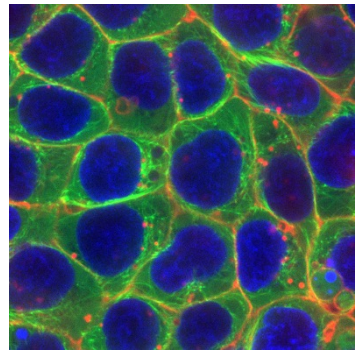
- Data visualization
- Compute statistical measures for data normalization
- Data dimensionality reduction with PCA
- Implementation of classification method using K-nearest neighbors (KNN)
- Performance evaluation
  - **Project 1:** Human face recognition
  - **Project 2:** Digit recognition
  - **Project 3:** Clothes recognition



Biomedical Image Analysis

Cell Nuclei Segmentation

- Data visualization
- Data pre-processing
- Implementation of a segmentation method
- Implementation of performance measure Dice
- Performance evaluation

  - **Project 4:** Otsu thresholding
  - **Project 5:** Clustering method