# **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 4: 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 3: Otsu thresholding





