Preprocessing
Microscopic images of biological organs include vast majority of variations based on the application, like cell and tissue processing. Different artifacts arisen from these diversities would be variations in color, illumination, movement, capturing system, etc. Some preprocessing algorithms might be essential based on application (image/video analysis), such as, denoising, deblurring, registration, mosaicing, glim elimination, illumination uniformity, etc.

Segmentation
Generally, microscopic image segmentation faces many challenges and this concern will drastically increase when the data are prepared without any standardization. Cells usually follow a circular/elliptical pattern in the most application and this might be a key-point in developing algorithms. Microscopic images of tissue sections might defy more challenges and more powerful methods must be utilized. Video processing of biological cells might have the most challenges in this field due to the artifacts mention in the preprocessing Section.

Microscopic Image Analysis Research Center (MIAC)
This center is established on January 13th, 2013 with the aim to aid the doctors for the more accurate diagnosis of diseases related to the field of pathology (microscopic diagnostics) by developing systems which are based on image processing techniques. This research core has provided conditions for the development of qualitative and quantitative research in the field of microscopy in the faculty of Advanced Medical Technology (AMT). Students and researchers can choose their dissertation and research in line with related medical applications. Also, regarding the MIAC's purposes, regular meetings are held in the faculty to provide an effective environment for discussion and exchange between professors and students to advance the researches.

MIAC Goals:
* Design and implementation of image processing algorithms on microscopic images for the more accurate and faster diagnosis of diseases
* Development and improvement of existing methods in the analysis of microscopic images for the diagnosis of leukemia (blood cancer), parasites, Pap smear's cancers and so on.
* Producing microscopic image processing software
* Holding congress and workshop related to the MIAC – (e.g., Workshop on Introduction to Graphical User Interface (GUI) and commercialization of medical software in MATLAB programming environment in the Faculty of AMT on June, 2013)
Selected journal papers and conference proceedings published by presenters:


Farahi, A., Talebi, A., Rabbani, H., "Automated border extraction of Leishman bodies in bone marrow samples from patients with visceral leishmaniasis", Journal of Isfahan Medical School, 32(286), 2014.


Sheikhhosseini M², Rabbani H, Zekri M, Talebi A. “Automatic detection of malaria from blood smear microscopic images”, 1st National Conference on Microscopic Studies, Histomorphometry and Stereology Research Center, Shiraz University of Medical Sciences, Shiraz, Iran, 2014.

