Machine Learning/Image Process for automation of chromosome based genetic diagnostics

Exciting startup projects, by Arkus.ai AI for Diagnostics and Beyond

Two projects: one for ML/Image processing; one for User Experience (UE)

The master's thesis project is a part of an exciting startup program by the startup Arkus.AI. You'll be part of the exciting startup journey!

The objective of the project is to build a prototype of an Artificial intelligence (AI) powered tool to automate chromosome based genetic diagnostics. Such diagnostic process is also called karyotyping. We have two topics of the master thesis. Machine Learning (ML) and Image processing technics will be experimented and developed as the key components of the tool, which will be one project for a master's thesis. The other project is of User Experience (UE). The UE component is indispensable in order to ensure the usefulness of the technology from tool user's point of view.

The input data are the chromosome images taken from the cells. The current diagnostic process is performed mainly by karyotyping specialists. They first analyse the images based on the shapes, size and relationships of different image segments, and then make diagnostic decisions. The project is apply ML/Image processing technics to classify the input chromosome images (see below picture) into normal chromosomes, or various types of abnormal chromosomes. The resulted algorithm will be validated in our partner labs in Germany.

There will be sufficient chromosome data available for training the ML models. The experts and labs will be also available for User Experience student to gain insights as to create the best and most relevant user experiences by the AI powered tool. The AI mentors in the company, our karyotyping experts will support you every step in the way to conquer the challenges!

Figure 1, Chromosome photo

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