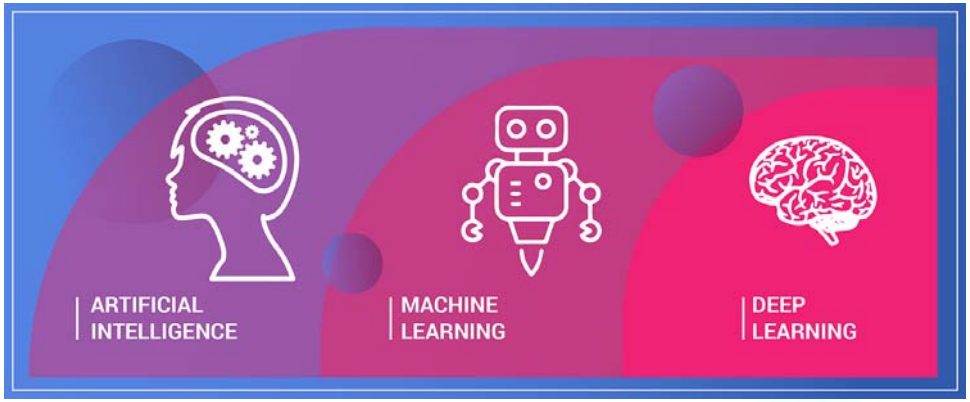
SHK, WHK, Diploma- & Masterthesis

Smart Microscopy in biomedical applications

Background

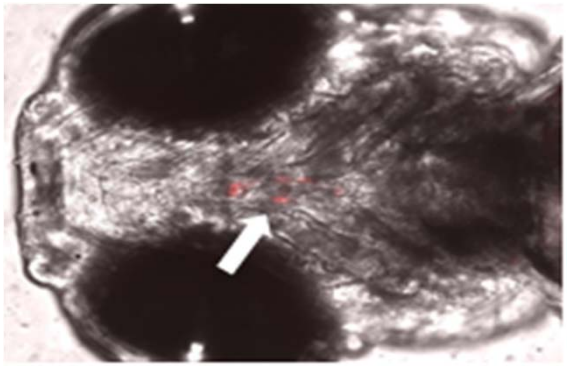
Microscopy is one of the main diagnostic tools in biomedical applications. We employ adaptive optical elements in microscopy to enable fast and aberration free 3D-scans of zebrafish embryos. The adaptive elements are controlled by several applied voltages. The main challenge hereby is to control the behaviour of the adaptive elements, thus we use methods of machine learning for control, e.g. convolutional and deep neural networks or reinforcement learning.



Credits: Elena Storozhkova/perfectial

Tasks

- Experimental characterization of adaptive optical components
- Evaluation of Machine Learning related control strategies
- Implementation and training of Neural Networks & agents



Credits: Marina Corral Spence/Springer Nature

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