

CAS

Artificial Intelligence in Medical Imaging

sitem-insel School for Translational Medicine and Biomedical Entrepreneurship



sitem-insel School

Connecting the best minds.

sitem-insel School offers continuing education programs to specialists in industry, hospitals and academia in the field of translational medicine and biomedical entrepreneurship. We share our expertise in medical device regulatory affairs and provide medical doctors with the necessary skills to take a leading role in the artificial intelligence-driven transformation of medicine.



Science meets Entrepreneurship

In an unique collaboration between the University of Bern and sitem-insel AG, sitem-insel School was founded to address unmet professional needs in the medical industry and to elevate the expertise in knowledge transfer from scientific and medical fields, as well as entrepreneurial skills. This partnership, in collaboration with other experts in the field of entrepreneurship, translational medicine and life science, provides you with access to an excellent network.

Learning Environment

All study programs are conceptualized as extra-occupational programs that can be reconciled with professional work. The program is taught in a blended learning environment and utilises e-learning, peer learning and interactive discussions with experts, on site lectures, workshops and case studies.

Small class sizes allow for large flexibility while at the same time permitting participants to profit from the lecturers expertise.

Connecting the Best Minds

Our programs are targeted at graduates and professionals who would like to advance their expertise and contribute to the success of the patient care and medical industry. Our highly specialised lecturers and module leaders come from various backgrounds: research and development orientied private companies, scientists from universities, ETHs and FHS, collaborators from regulatory agencies, financial experts and clinicians.

The study program

The main objectives of the Certificate of Advanced Studies CAS in Artificial Intelligence in Medical Imaging is to equip Medical Doctors with the necessary skills to take a leading role in the AI driven transformation of medicine. The course program was developed for medical professionals and provides them with the necessary knowledge and skills to translate medical problems to data science problems. By working on an AI project of their own, the participants will learn the fundamental concepts of Artificial Intelligence and can thus judge the feasibility and adequacy of proposed AI solutions.

Participants

The program addresses Medical Doctors who are active in areas where image and video analysis are integral parts or who are interested in the application of artificial intelligence in medical imaging and diagnosis.

Duration + ECTS

The study program consists of 6 modules, with altogether 12 days on-site courses supplemented with e-learning elements. The overall study time is approximately between 375 to 450 working hours and credited with 15 ECTS.

Degree

A Certificate of Advanced Studies CAS in Artificial Intelligence in Medical Imaging is awarded by the University of Bern upon successful completion of the program.

Annual Symposium

Each year, the study program starts with a public symposium in September, providing an overview and current trends of Artificial Intelligence in Medical Imaging.

The modules

M1 Artificial Intelligence Project

The first module introduces data sets for a concrete AI project in Medical Imaging. It teaches participants on how to use tools to prepare imaging data for analysis with Artificial Intelligence. After introducing basic principles and procedures for data preparation, participants will be able to take part in data collection processes as well as in the evaluation of large amounts of medical data by the use of Artificial Intelligence. Throughout the period of the CAS, participants use different AI methods to analyze these data.

M2 Statistics and Programming

Module 2 is providing preliminary knowledge on mathematics and programming necessary to tackle the following modules. Participants will acquire basics in Python programming that are relevant for data analysis.

M3 Fundamentals in Artificial Intelligence

Module 3 teaches basic knowledge in AI models including mathematical concepts that are relevant for “building blocks” of neural networks. Participants will learn about basic elements of AI models including e.g. data representations, strategies for optimization and methods for the evaluation of AI models.

M4 Applied Artificial Intelligence in Medical Imaging

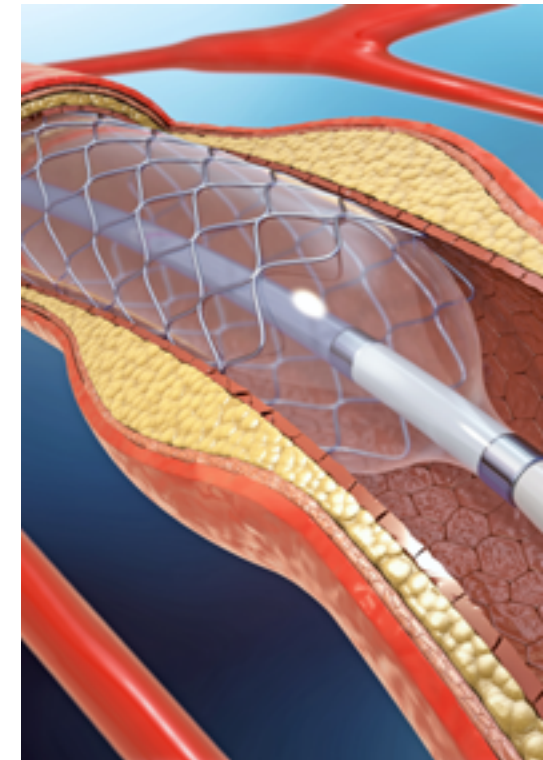
Participants will get to know about the relationship between a clinical problem and a machine learning problem as well as the trade-off between manual and automated labelling of training data for AI. Participants will know the properties of state-of-the-art AI models and learn how to apply and validate them in practice.

M5 Applications of Artificial Intelligence

Module 5 reviews applications of AI-assisted image interpretation technologies in radiology, neuroradiology, and nuclear medicine. In order to integrate AI in the clinical workflow for improved efficacy, participants will be able to select and benchmark the required hard- and software for AI.

M6 Legal and Ethical Challenges

New and emerging medical technologies and devices are regulated for safety and efficacy by competent authorities such as Swissmedics in Switzerland. In module 6, participants will be able to identify and solve legal, ethical, and regulatory challenges related to the whole life cycle of AI Technologies in the medical sector.



Admission

Applications are accepted throughout the year until 31 August 2021 or until all available places are filled.

Requirements

The requirements are those of the University of Bern. Required is a completed study program in medicine, professional experiences as a medical doctor and basic knowledge in the handling of medical image data sets. Admission *sur Dossier* by the study commission is possible. Participants will be registered at the University of Bern.

Fees

The fee for the CAS in Artificial Intelligence in Medical Imaging is CHF 9'800.00.

Additional Information

The study program starts in September 2021 and is designed for a duration of two to three semesters. The course language is English. On-sight classes are held at sitem-insel, the Swiss Institute for Translational and Entrepreneurial Medicine in Bern, Switzerland. E-learning courses may be performed at home. In case of University closures due to Covid-19, planned on-sight lessons will be held in virtual classrooms.

Partners

The study program CAS Artificial Intelligence in Medical Imaging is jointly organized with Inselspital, the Bern University Hospital. Faculty includes professionals from research and development, from industry, as well as medical practitioners.

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Dr. Benedikt Wiestler
Dept. of Neuroradiology, TUM University Hospital

Contact

Whether you are yet to decide, are already set on your choice, or have a general inquiry - we welcome you to contact us anytime. We understand the importance of continuing education and help you to make sure we are your right choice.



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