**IMTEK**

IMTEK belongs to the world's biggest and leading academic research centers on microsystems engineering. The chair of application development conducts research on micro-fluidic systems and biomedical applications. Our research focuses on the transition from manual 3D cell culture to standardized, automated, and high-throughput bioprocessing. We are looking for a new member to our team:

Master's Thesis (m/f/d)

AI-Driven Classification of Organoids for Cancer Research and Personalized Medicine

Organoids (3D miniature organs grown in vitro) are revolutionizing biomedicine, offering unprecedented opportunities in cancer research, drug screening, and personalized diagnostics. However, a major bottleneck in this field is the manual, subjective, and time-consuming process of isolating specific, high-quality organoids for experiments.

Join us at the exciting intersection of Artificial Intelligence and biotechnology. We are developing a cutting-edge device designed to selectively sort organoids for applications in cancer research and personalized diagnostics (e.g., drug screening). To achieve this, we rely on advanced AI to analyze and differentiate complex organoid morphologies, such as budding, opacity, size, and even previously unidentified characteristics.
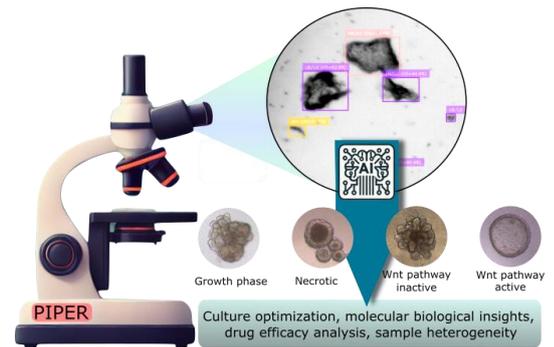
Your responsibilities

- **Model Optimization:** Develop and compare AI models against our existing YOLO-based object detection model.
- **Data Training:** Train the model using new and expanding datasets of organoid images. Label existing microscopic images for model training.
- **Performance Tuning:** Actively improve the model's classification accuracy and processing speed to enable efficient, real-time sorting.
- **Feature Discovery:** Help the AI identify and differentiate complex morphological features (budding, opacity, size, etc.).
- **Independent Research:** Take ownership of the AI development phase, working independently to solve technical challenges.

Your profile:

- Master student in Computer Science, Artificial Intelligence, Data Science, or a closely related field.
- Strong theoretical and practical background in AI, Deep Learning, and Computer Vision.
- Solid programming skills and hands-on experience with AI driven image analysis & labeling.
- Highly independent, proactive, and structured working style.
- Prior experience with YOLO, PyTorch, TensorFlow or similar architectures is a strong plus.
- An interest in medical technology or biotechnology is beneficial but not strictly required.

We offer:

- A young, creative team and environment with the freedom to realize your own ideas. Modern laboratories with state-of-the-art research project and equipment
- Professional computational infrastructure supporting the work.
- Research and development close to applications with an innovative technology

If you are interested, please contact us for further information:

Dr. Daniel Straubinger
Laboratory for MEMS Applications
Georges-Köhler-Allee 103
Phone: +49 761 203-73235
E-Mail: Daniel.Straubinger@imtek.uni-freiburg.de