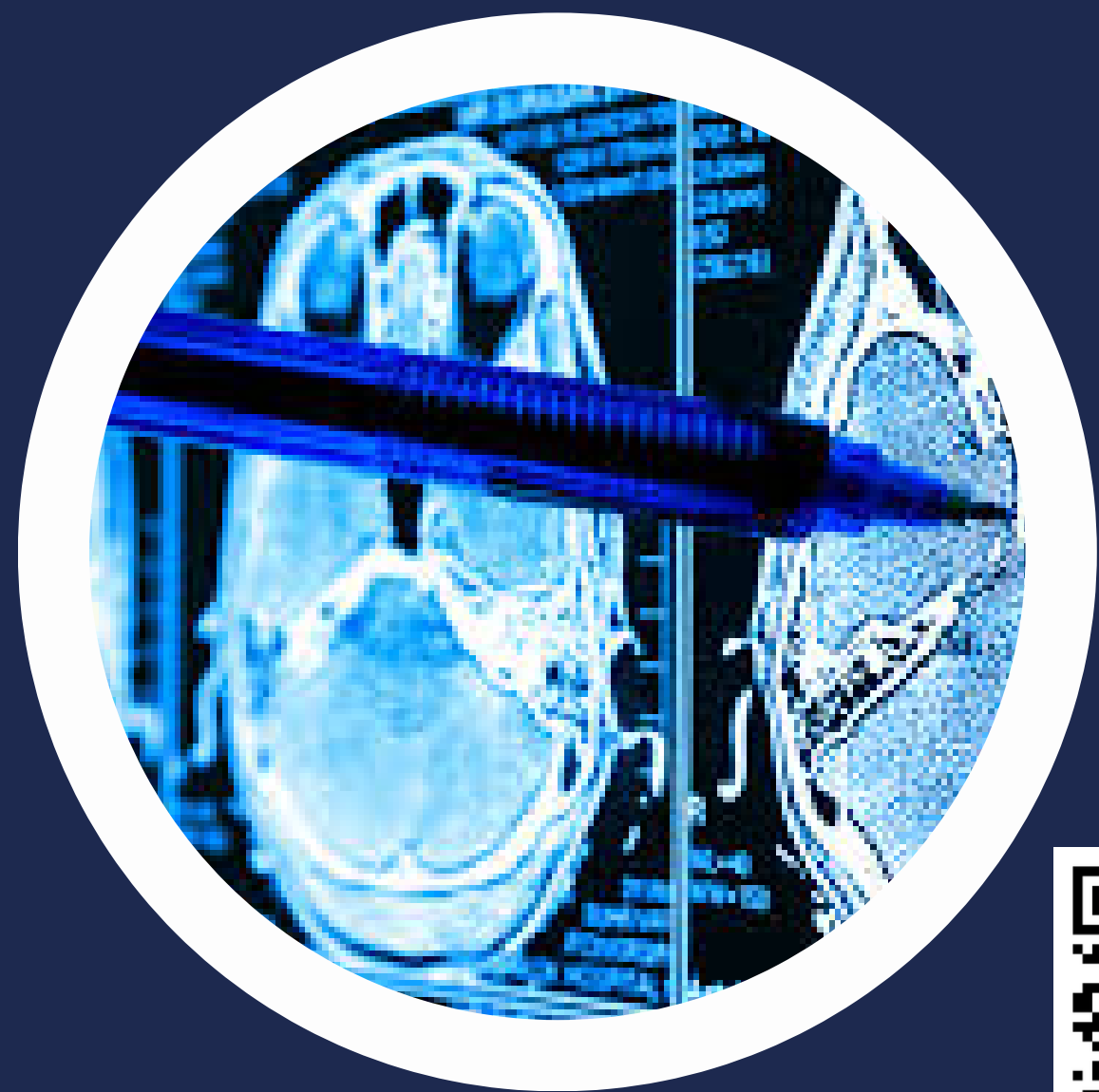


## PHYSIOLOGICAL CONTROL SYSTEMS

This competency applies advanced control theory and informatics to physiological systems in healthcare. It develops models and algorithms for therapy optimisation and biomedical device control, with emphasis on glucose regulation, oncology, and renal therapies. By bridging engineering research and clinical practice, the activity strengthens applied RDI and supports data-driven, personalised treatment strategies.



### ACHIEVEMENTS

- Model-based control algorithms for cancer therapy and tumour-growth dynamics
- Robust control systems for artificial pancreas devices
- Control strategy contributions for hemodialysis machines
- Biostatistical analyses supporting public health and disease monitoring



### INFRASTRUCTURE

- Biomedical signal acquisition (ECG, EMG, PPG; multimodal sensing)
- Real-time physiological modelling and control platforms
- Computational infrastructure for predictive analytics and controller design
- Digital health and MedTech prototyping tools aligned with clinical integration



### REFERENCES

- Optimal cancer-therapy control developed with HUN-REN Drug Resistance Research Group and Medical University of Vienna
- Physiological system modelling in oncology with Medical University of Vienna, HUN-REN Drug Resistance Research Group, and CNR IASI