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# Towards Intelligent Interfaces for Computational Heart Models: A feasibility study for an MDE application in biomedical engineering

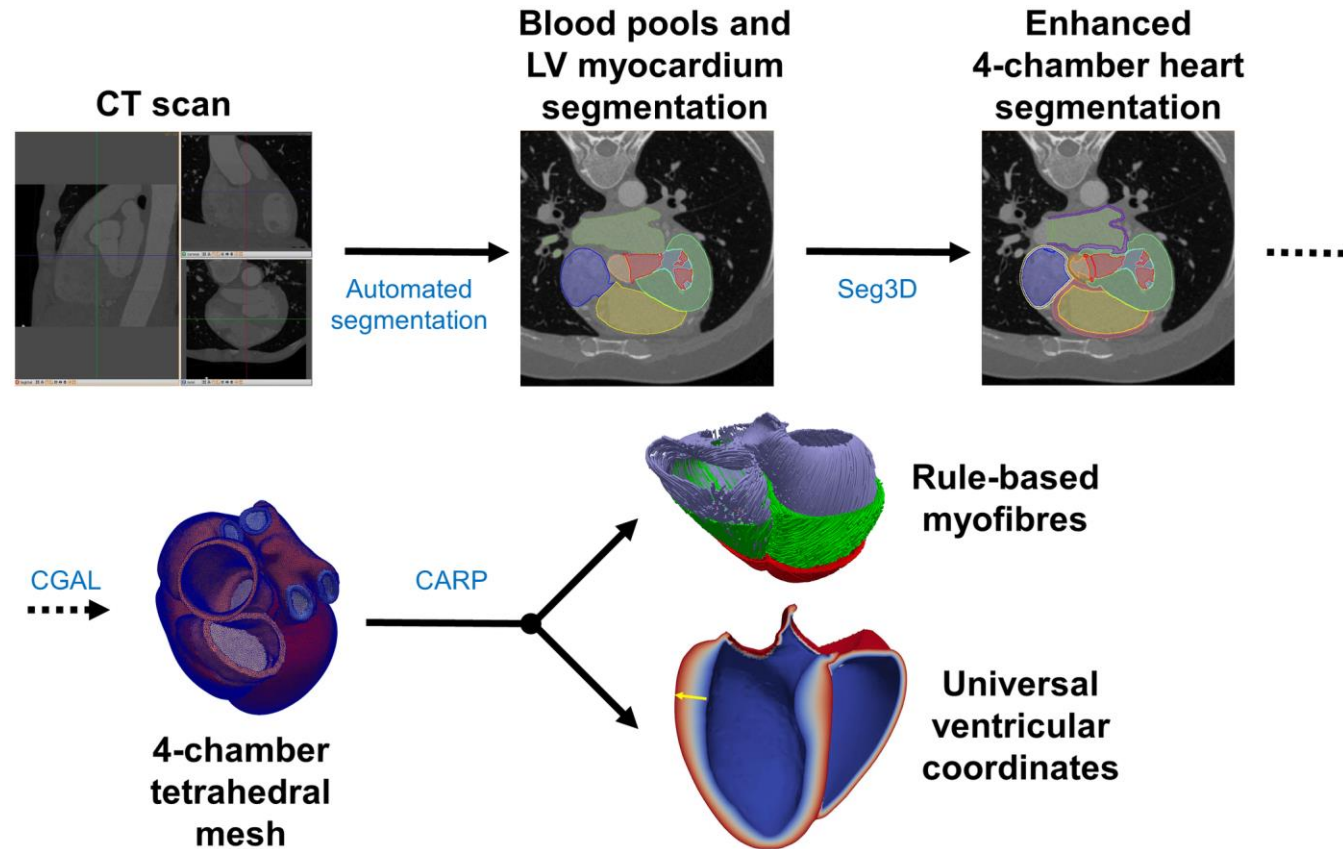
Report on seedcorn project

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# Computational models of hearts

- Important for personalised predictive medicine
- Derived from imaging data
- Use simulation to understand how electric stimulus travels across organ tissue
- Highly complicated to construct, requiring broad range of skills

# Computational models of hearts



# Challenges

- Configuring the simulation
  - Currently done via command line parameters at very low level
  - Errors can be difficult to spot before running the simulation
- Errors that only occur during a simulation run mean wasted time, cost, and effort
- Can we help with a language that flags issues earlier?
  - Common issues: duplicate definitions of tissue areas with different properties, stimulus placed outside of tissue

# What did we do?

- Developed a prototype language using TextX
  - Define and combine mesh sources
  - Classify tissue parts and assign properties
  - Define stimuli and general simulation configuration parameters
- Demonstrated feasibility
  - Easier to define simulator configurations
  - Potential to spot errors before simulation execution

# Ongoing collaboration

- Secured cross-faculty funding for a PhD student
- Secured funding for DT4Health
  - Centre for Doctoral Training on Digital Twins for Healthcare
  - Three cohorts of students, starting '23/24