

Model-Based Conformance Testing for Implantable Pacemakers

George Chen

BME/EE 2015, Johns Hopkins University

Graduate Student: Zhihao Jiang, CIS, UPenn

Advisor: Rahul Mangharam, ESE, UPenn

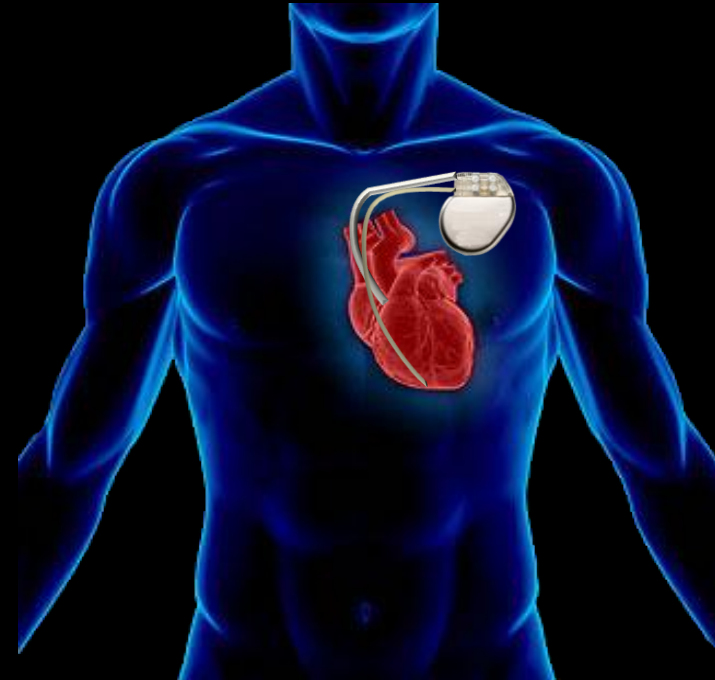


Problem

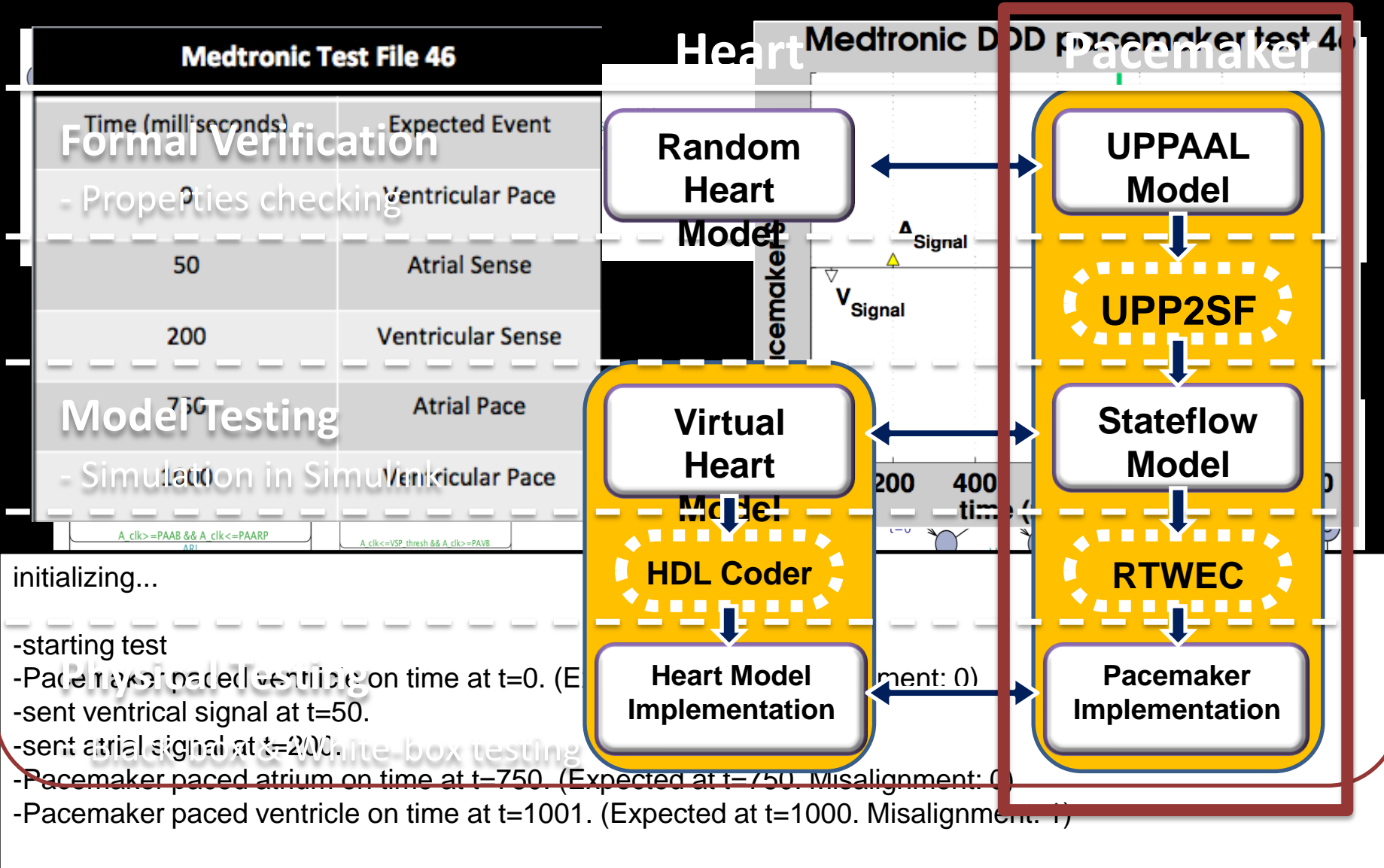
- Over 200,000 pacemakers recalled in 1990-2000 were a result of **software issues**
- There is currently **no systematic way** to test the safety of pacemaker software.

Goal:

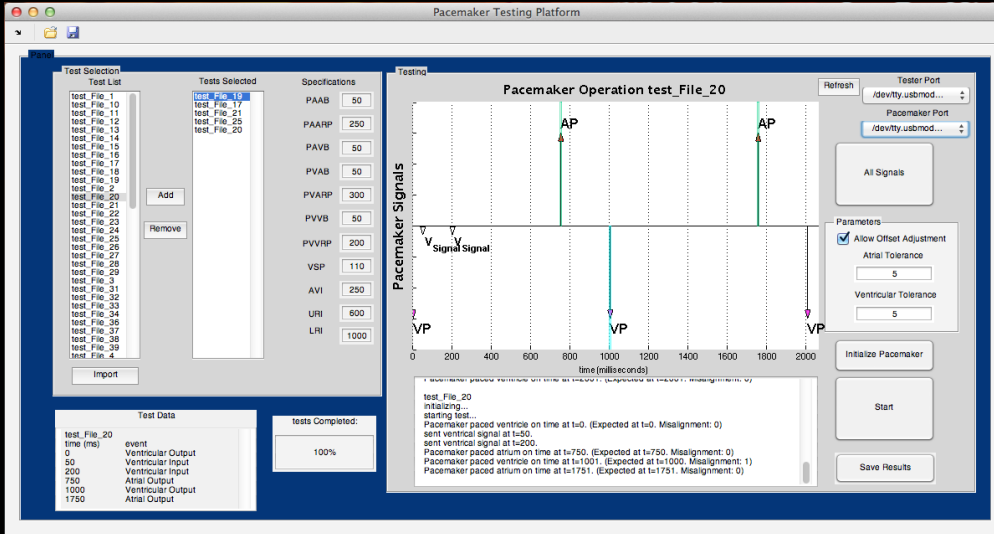
Develop tools and methodologies to test and formally verify whether the software in medical devices is safe.



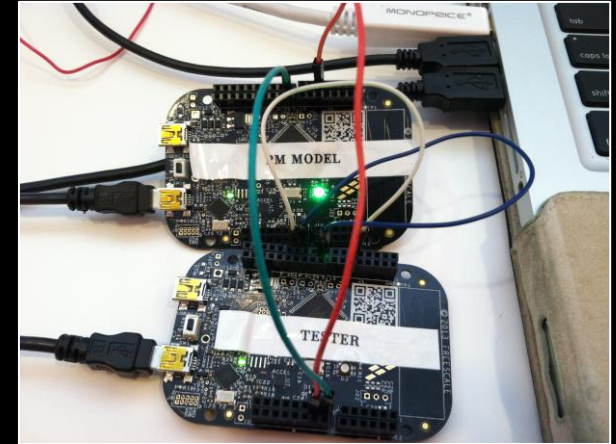
Model-Based Design Framework



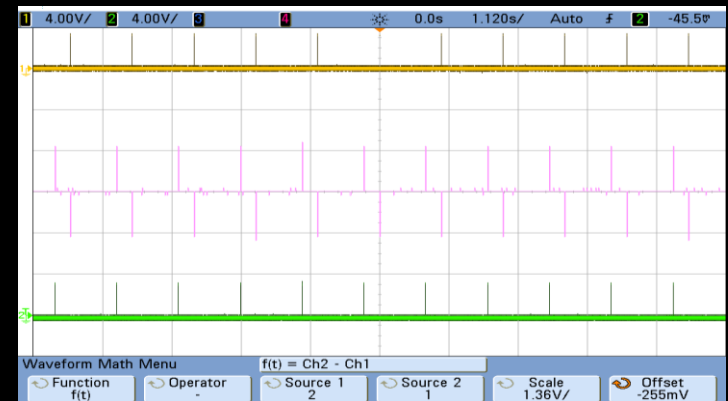
Implementation



Graphic User Interface



Hardware Testing Platform



Pacemaker Output

Acknowledgements

- Prof. Rahul Mangharam
- Zhihao Jiang
- Abhijeet Mulay
- mLab members
- Dr. Jan Van Der Spiegel
- National Science Foundation

The logo for SUNFEST, featuring the word "SUNFEST" in a bold, red, sans-serif font, centered between two horizontal red bars.