

What is the National Grid Service?

The National Grid Service (NGS) aims to provide coherent electronic access for UK researchers to all computational and data based resources and facilities required to carry out their research, independent of resource or researcher location.

You can find further information about the NGS on its website at www.ngs.ac.uk. The website contains a wide range of documentation including technical details, software listings, user case studies and online tutorials for self-guided learning.

Keep in touch with the NGS

If you would like to be kept up to date with news from the NGS then join our mailing list to receive fortnightly news updates including events and training opportunities.

www.jiscmail.ac.uk/lists/NGS-NEWS.html

If you are a user of NGS resources then join our status mailing list to be kept up to date with service news and updates.

<http://www.jiscmail.ac.uk/lists/NGS-STATUS.html>

The NGS produces a quarterly newsletter containing a large variety of news about the NGS

including user case studies, NGS site news, application updates and conference reports. The latest edition of NGS News can be found on our website in the Outreach section or join our mailing list to receive an announcement when the latest edition is released.

Contact the NGS

If you have any queries regarding the NGS or if you would like more information, then contact our helpdesk:

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The effects of defibrillation on the heart



www.ngs.ac.uk



White Rose
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Universities of Leeds, Sheffield & York

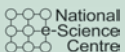


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MANCHESTER
1824
The University of Manchester

Name: **Thushka Maharaj**
Institution: University of Oxford
Research: **The effects of defibrillation
on the heart**

Thushka Maharaj is a DPhil Student within the Computational Biology Group at the University of Oxford. She is part of an international collaboration studying the effects of applying an electrical shock to both healthy and diseased hearts, in an attempt to understand exactly how defibrillation works.

Within a normal, healthy heart the muscle cells (myocardial cells) produce regular, powerful cardiac contractions that allow the heart to pump blood around the body. During fibrillation, these contractions are no longer regular and powerful, but irregular so the heart is unable to pump blood around the body. The standard method today of treating hearts in fibrillation is to shock the heart into stopping completely – defibrillation – so that the myocardial cells have the chance to get back into a regular rhythm again.

Whilst this technique has been used successfully for many years, the mechanisms behind it

are still not fully understood. Along with colleagues in the Integrative Biology project (www.integrativebiology.ac.uk), Thushka hopes to address some of the questions still being asked. In order to do so, she simulates how the application of electric shocks and differing types of tissue properties affects the behaviour of a normal, healthy heart.

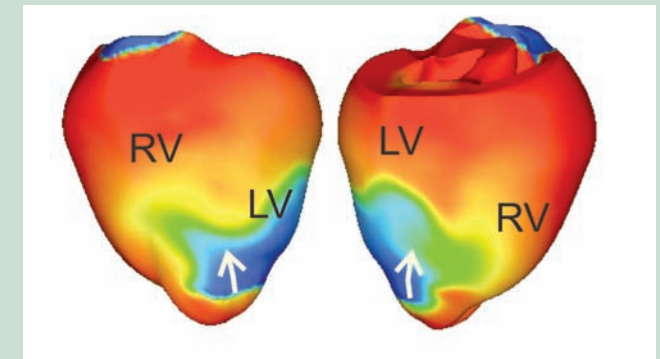
“We use parallel code with around a million nodes, so it is pretty computationally intensive,” explains Thushka. “But we can get 20ms of animation in 20 minutes using 32 CPUs on the NGS, which is a huge improvement.”

So much so in fact that she feels without the NGS, she would not have been able to even attempt her doctorate research. “I didn’t even know the NGS existed before starting my doctorate, but I don’t think we could have run these simulations without using the NGS. And the benefits of services such as the Storage Resource Broker are immense -

it’s fantastic to be able to share data with colleagues all over the world so easily.”

Further information

Integrative Biology Project -
www.integrativebiology.ac.uk
Computational Biology Group,
University of Oxford -
<http://web.comlab.ox.ac.uk/oucl/research/areas/biocomp>



A whole ventricular model showing reentrant activity in the ventricles. The arrows show the direction of wave propagation.