

GridFlexDC: Intelligent power system optimisation for AI data centres

Market domain

- Power system operators procure frequency-response services to stabilise the grid
- Requires power flexibility delivered in less than a second, within a tight error tolerance, up to a preagreed MW scale power capacity

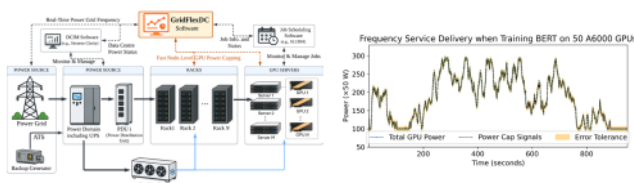
Opportunity

- Provide accurate sub-second power adjustment by power capping of aggregated GPU's in AI Data centres
- Provide frequency response with low activation rates & durations, e.g., <1% of power capacity activated for Great Britain in 2024

Novel Solution

- AI-based fast time-varying GPU power capping to deliver frequency response on top of the efficiency and lifetime improvement

Applications: Data centre power, energy management/control, power system flexibility services



Features

Static GPU power capping is widely used to optimise GPU lifetime, efficiency and computing speed

Benefits

Increases GPU lifetime by 0.7%

Oxford AI-based approach makes intelligent power capping time-varying; enables a business-grade grid frequency service

Increases FLOPS/W efficiency by 0.3%

Features	Benefits
Earning revenue with almost zero computing delay	Incurs a negligible computing delay of 0.08%
Wider applications include provision of mandatory demand response and improved resilience when data centre microgrid operates independently of the supply grid	1 GW H100 data centre can provide 500 MW of frequency response and additionally earn £17m/year in Great Britain, €54m/year in Germany, and \$19m/year in the US
End users include AI companies; data centre operators; data centre energy infrastructure providers; and data centre energy management software providers	

Available for

- Consulting
- Licensing

To find out more, contact enquiries@innovation.ox.ac.uk and quote the project number.

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