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# Neural Operators and Neural Networks for Physics Applications

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Neural networks serve as universal continuous function approximators in finite-dimensional spaces and can offer an alternative to finite element methods for solving partial differential equations (PDEs). Extending neural networks to neural operators, which can approximate continuous (and potentially non-linear) mappings between function spaces, is non-trivial. Neural operators are designed to be independent of discretization or resolution, making them highly effective tools for physics and engineering applications. They can act as surrogate models for solving PDEs. Additionally, neural operators have potential applications in operator or functional approximation using experimental data, especially when the underlying mapping is complicated or lacks an analytical solution.

**Author:** VAN DEVENTER, Heinrich (University of Pretoria)

**Presenter:** VAN DEVENTER, Heinrich (University of Pretoria)

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