Propositions

accompanying the dissertation

Bridging Simulation and Experiment in Nanoscience with AI

by

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1. Quantum computing offers a promising avenue for studying neuronal systems. *Chapter 3 of this thesis.*

2. Machine learning for the analysis of neuroscientific data will become standard practice in laboratories. *Chapter 4 of this thesis.*

3. Generative models can accelerate the measurement process in spin-based quantum computing devices. *Chapter 6 of this thesis.*

4. Neural networks that simulate quantum systems can be used to identify phase transitions without computing order parameters. *Chapter 7 of this thesis.*

5. The difficulty of learning quantum states using neural wavefunctions can be attributed to the complexity of their energy landscapes.

6. It is the government's responsibility to ensure that the population's basic needs are met.

7. The peer review process of scientific articles should always be double-blind.

8. Scientific articles should be accepted for publication based solely on the Introduction and Methodology, to reduce publication bias and encourage robust experimental design.

9. As artificial intelligence disrupts the current economic order, governments must ensure its development and deployment are ethical, socially beneficial, and safeguarded against harmful applications.

10. Colonial legacies persist in global science through unequal access to funding and institutional prestige.

These propositions are regarded as opposable and defendable, and have been approved as such by the promotor prof. dr. ir. R. Hanson and co-promotor dr. E. Greplová.