Propositions

accompanying the dissertation

ADAPTIVE ENERGY-AWARE FRAMEWORK FOR CONNECTED VEHICLE SERVICES

by

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1. Software-level approximation techniques are able to balance the computational demands of AI models in connected vehicles applications without sacrificing models accuracy. (this thesis)
2. Metric-specific learning for AI models provides model learning patterns that improve algorithm bias mitigations, model interpretability, and fairness. (this thesis)
3. Collaborative edge computing mechanisms improve resource allocation in heterogeneous memory and compute settings while reducing the energy consumption of applications. (this thesis)
4. AI can only support complex socio-technical systems when two operations of human understanding are integrated, i.e. intuition and deduction.
5. The deployment of AI models on heterogeneous edge systems requires adaptive algorithms that consider computing constraints and device-specific capabilities.
6. For real-world applications using AI models, robustness, efficiency, and reliability must be considered as fundamental evaluation criteria alongside accuracy.
7. Integrating energy consumption and carbon footprint assessments into the AI development life cycle is essential for creating sustainable practices in AI research and development.
8. A researcher's ability to explain the fundamental and mathematical components of their developed AI model is inversely proportional to the model's complexity.
9. There is no statistical or probabilistic correlation between coffee consumption and the speed of solving research problems.
10. The probability of a computer or device crash increases exponentially as the deadline for paper submission and application demonstration approaches.

These propositions are regarded as opposable and defendable, and have been approved as such by the promotors, prof. dr. ir. M.F.W.H.A. Janssen and dr. Y. Ding.