



CRII: CPS: High-Performance Adaptive Hybrid Feedback Algorithms for Real-Time Optimization and Learning in Networked Transportation Systems

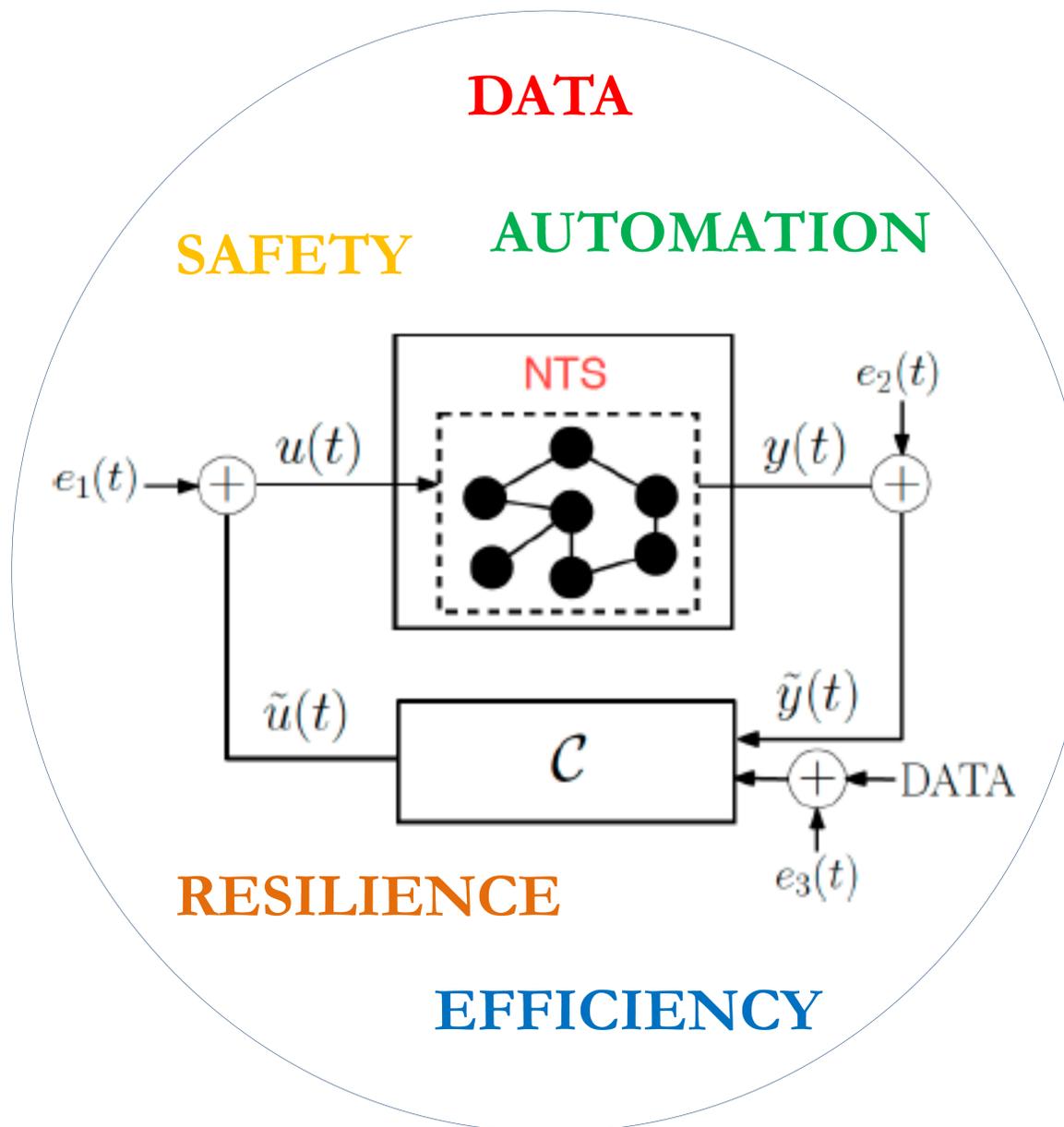
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Challenge:

- Adaptive feedback-based optimization algorithms suffer from slow rates of convergence and aggressive exploration requirements. This has prevented their widespread adoption in network transportation systems.

Solution:

- By using tools from hybrid dynamical systems and accelerated optimization, we have generated a family of new efficient real-time optimization algorithms with robustness certificates.



Scientific Impact:

- The class of algorithms and controllers developed in this project are applicable to other areas, such as power systems, water distribution systems, and agriculture systems.

Broader Impact:

- More efficient algorithms can lead to lower congestion and better safety.
- The material of the project is being incorporated into different graduate-level classes at CU Boulder.
- The algorithms developed in the project are at least twice as fast as standard techniques.

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