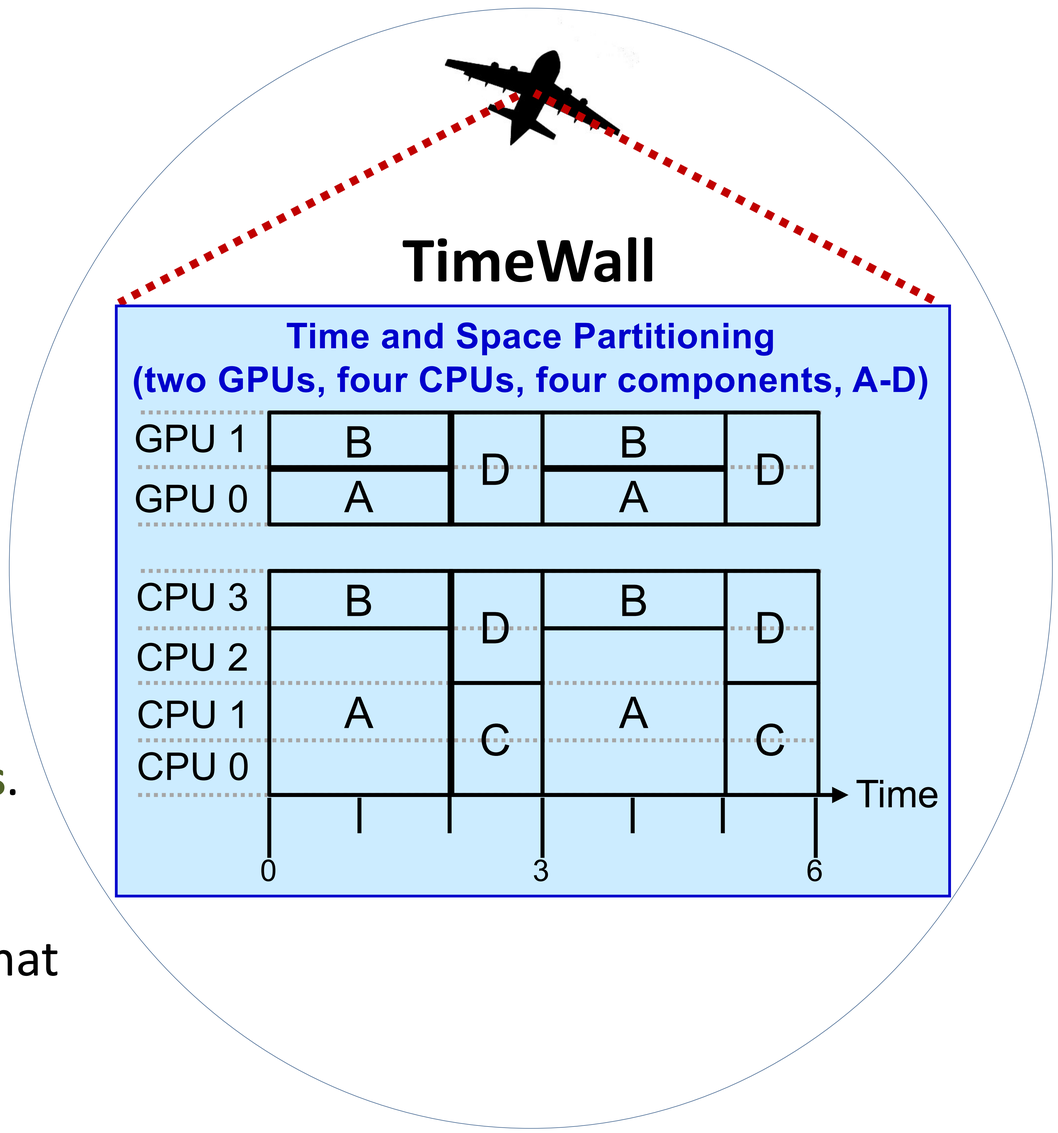
CPS: Medium: GOALI: Enabling Scalable Real-Time Certification for AI-Oriented Safety-Critical Systems, CPS 2038855, Sept. 2020, J. Anderson (PI), R. Alterovitz, D. Smith, UNC, P. Sarathy, Northrop Grumman

Challenge:

- **AI techniques** are making their way into safety-critical settings, like cars and airplanes.
- A correct AI output that is *late* is just as useless as an incorrect one. How to prevent this?

Solution:

- Isolate accelerator-using AI components w.r.t. **time & space** via **TimeWall**.
- Provide mitigations of cross-component **interference channels**.
- Enable **memory oversubscription** via SSDs.
- Enable creating **AI components** that execute **on time**.



Scientific Impact:

- Component-wise AI will pave the way for real-time **certification procedures** across a range of application domains.

Broader Impact:

- *Society:* Safe autonomy will never happen without certification.
- *Industry:* Cross pollination through internships at Northrop Grumman.
- *Mentoring:* **TOPICS** (Talking Over Papers In CS), new weekly reading group for undergraduate women.

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