

CPS:Breakthrough:Secure interactions with Internet of Things --Adaptive Data Verification in Vehicular Communications

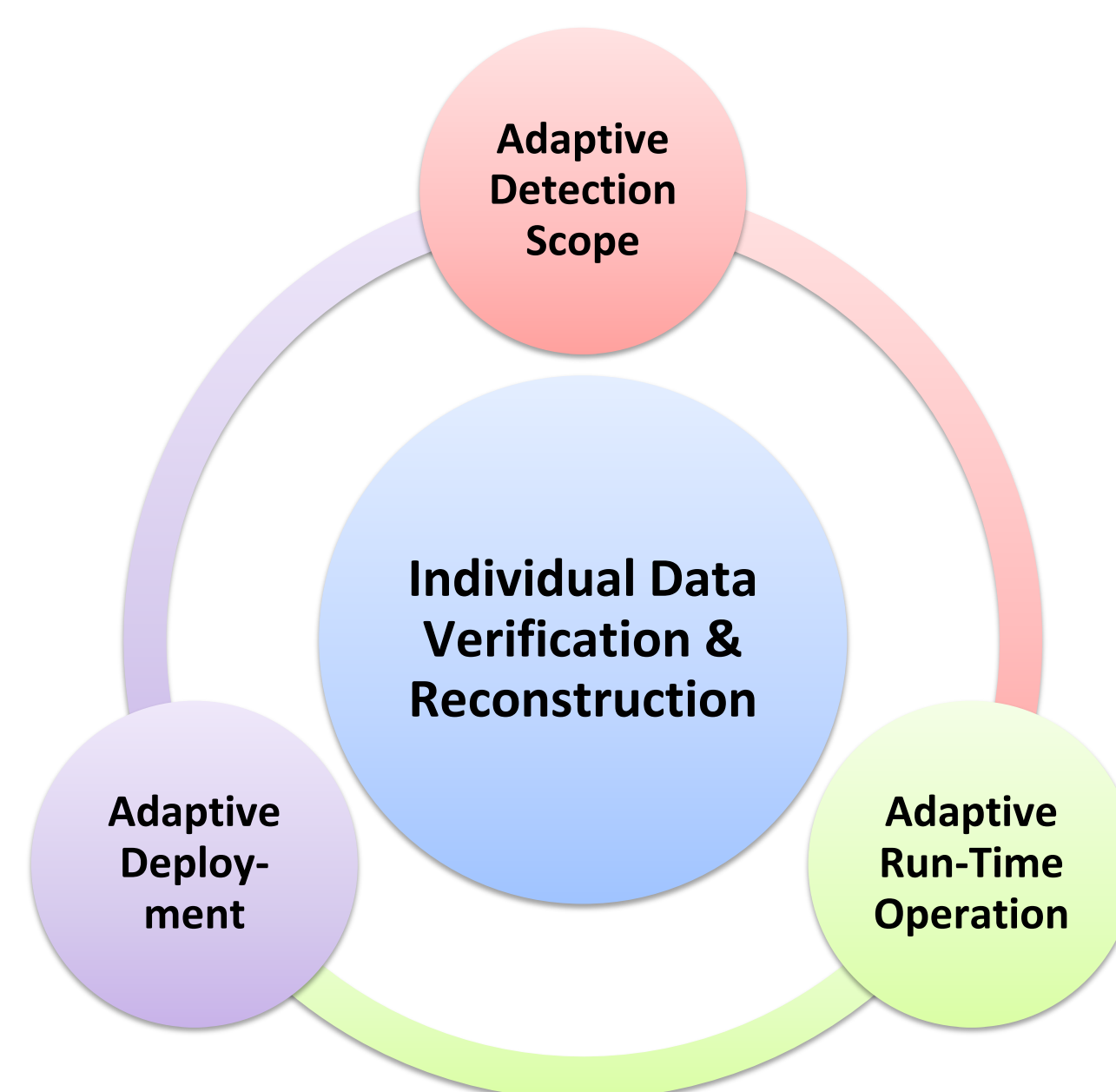
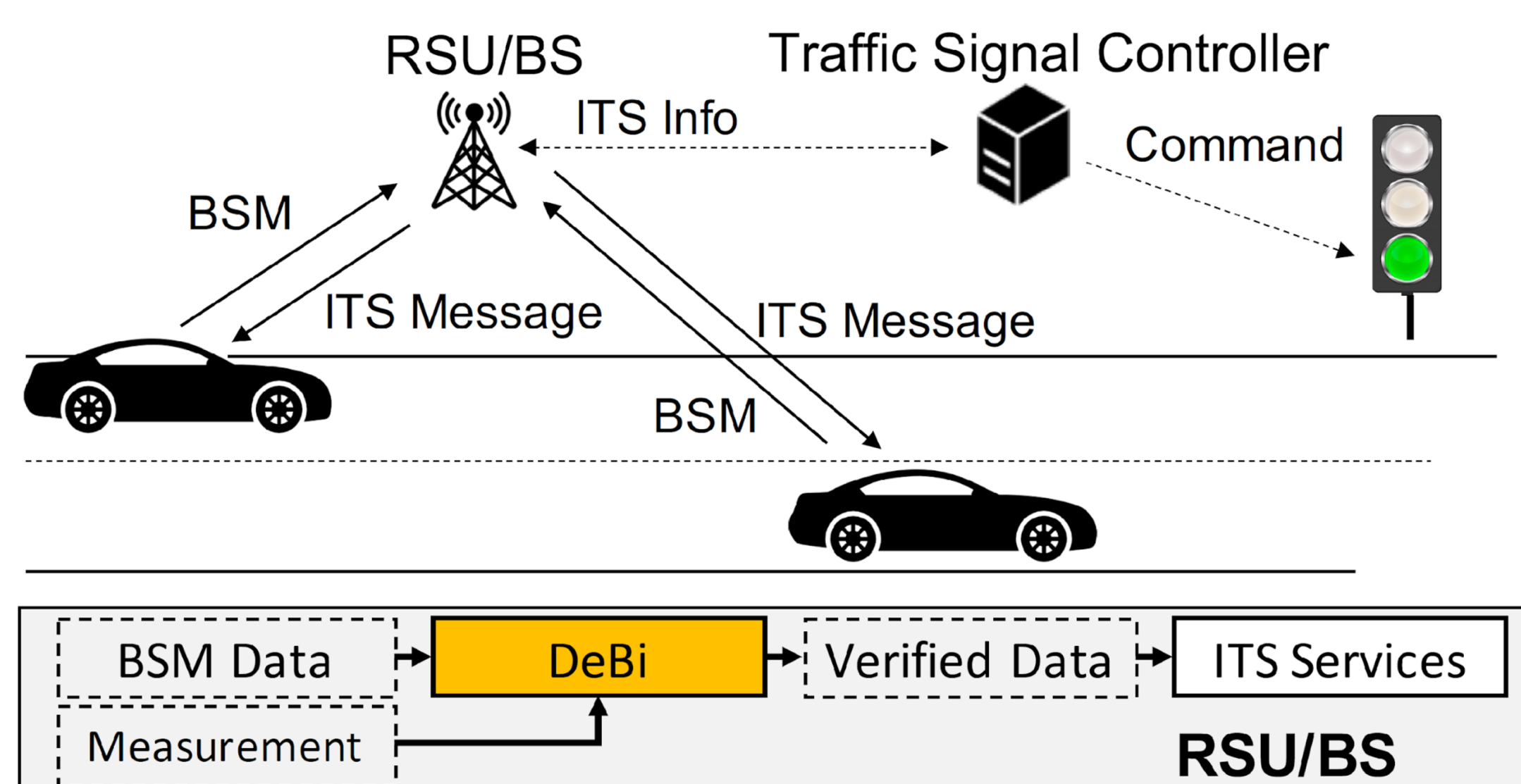
Kang G. Shin @ University of Michigan
<https://rtcl.eecs.umich.edu/rtclweb/research/>

How to design a practical system for V2I/V2X message verification with three adaptive features since compromised information in ITS can degrade mobility and safety of vehicles.

Challenges

- Uncertainty of standards and regulations in different regions;
- Heterogeneous operating environments and application requirements; and
- Uncertainty of inter-entity cooperation.

Solutions: An Adaptive System for Received Info Verification

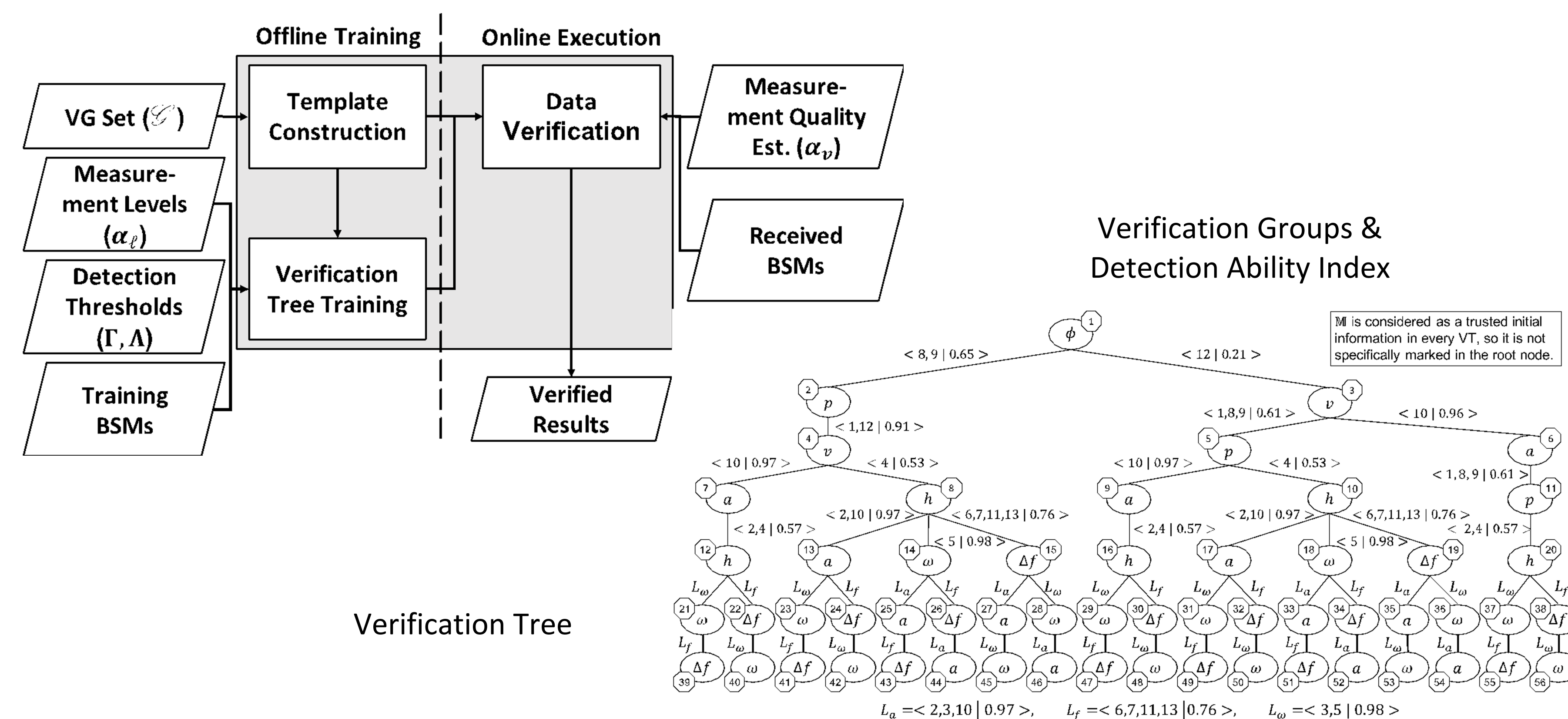


Broader Impact in Economical-Social-Environmental Advancements

- Reduce design cost for ITS service deployment.
- Provide a safe/smooth/eco-friendly transportation.
- Ensure the operational correctness of ITS services and thus reduce fossil-fuel consumption

Scientific Impacts

- New run-time data verification and reconstruction mechanism for individual vehicle data.
- New concept of *verification group*, *verification tree*, and *detection ability index*.
- A thorough understanding of important properties in designing infrastructure-assisted systems.
- A concrete design to enable adaptive features for future verification systems.



Broader Impact in Education and Outreach

- Graduated 1 PhD student who joined Google
- Collaborated with industry, especially Intel
- Integrated with senior/graduate level courses (e.g., EECS 571 Principle of Real-Time Computing)