A Holistic Bayesian Framework for Intelligent Calibration of Constellations of Sensors

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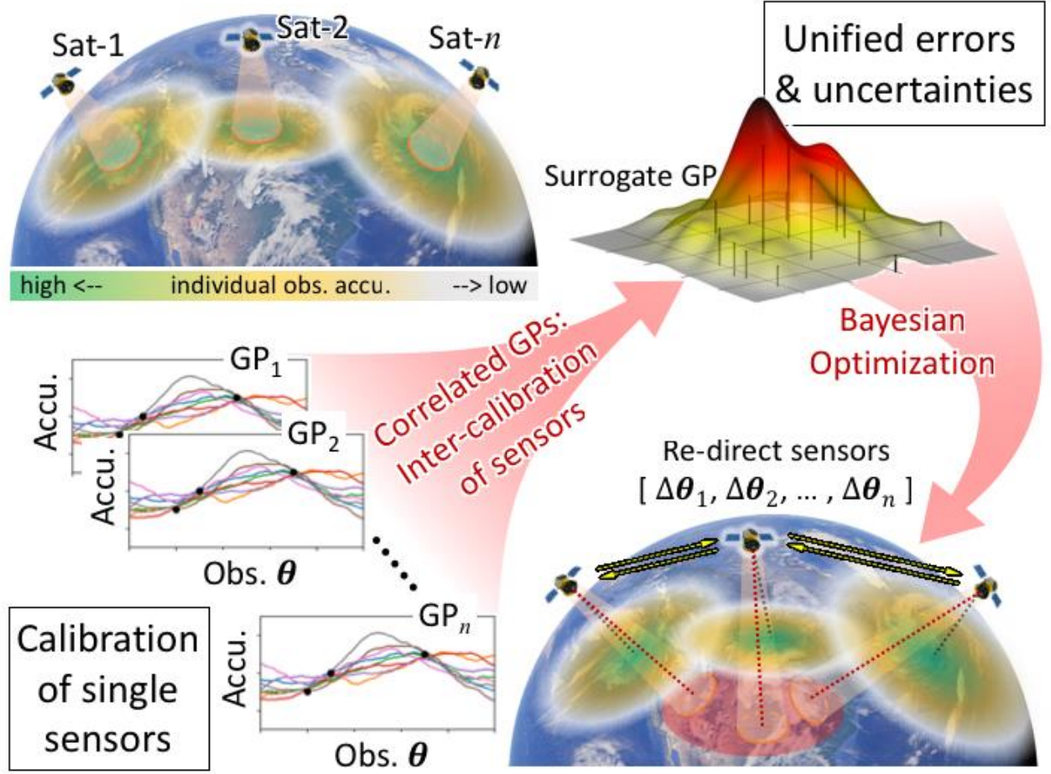
- **Objectives:** autonomous operation and control of constellations of sensors
- **Innovation:** a principled Bayesian approach to calibrate individual sensors, inter-calibrate among sensors, and generate optimal guidance to re-direct sensors
- **Overcome** the deficiency of the existing methods and lead to intelligent calibration in a principled, holistic way



Start at TRL 1 (foundation, algorithms) ; end at TRL 3 (framework, evaluation).

Approach

- Correlated Gaussian processes (GPs) that characterize the individual sensor performance and inter-calibrate the network of sensors
- Bayesian optimizations to provide guidance for sensor re-direction
- A series of experiments for validations

Potential Impact

- Answers to critical questions raised in the solicitation
- Increasing system performance, reducing cost, maximizing mission efficiency, less operational constraints, increased mission success
- Advancing the SOA in uncertainty quantifications, numerical analysis, and control theory