## **Combined Approaches Model-Driven Approaches Data-Driven Approaches** Safe World Safe Safe Range of acceptable risk must Learning Region be defined for exploration. A model of the world can be learned by collecting data over time. There is **no** clear boundary between Model what can be accurately modeled (and is safe) and Only a small part of the world can be accurately what cannot be accurately modeled (and is unsafe). Model + Learning modeled. There is a clear boundary between what can be accurately modeled (and is safe) and what An accurate model of the world can be learned cannot be accurately modeled (and is unsafe). over time by collecting data. The safe boundary is well-defined and extensible. Unsafe Benefits

Challenges

Strong guarantees within specific contexts

Generalization to new contexts

Highly generalizable to new contexts

Providing hard guarantees

Generalizable and safe within defined boundaries

Safely and efficiently exploring the unknowns