Building Meaningful Products Using Complex Sensor Systems

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DEKA

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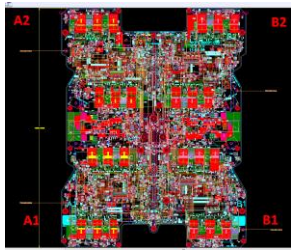
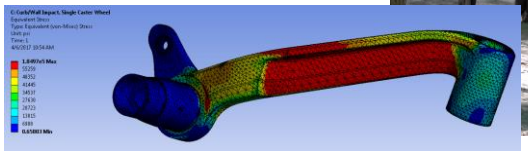
- 30 years of applying computer vision and robotics in real world applications.
- 800+ Incredibly smart engineers.
- Incredible technical resources.





The World is Complex

- Sensors have inherent physical limitations.
- Algorithms are prone to weakness and errors.
- Cross checks are necessary to eliminate uncertainty and reduce risks.
- Sensor sample times and algorithmic processing times vary.
- Limited power available for complex processing.

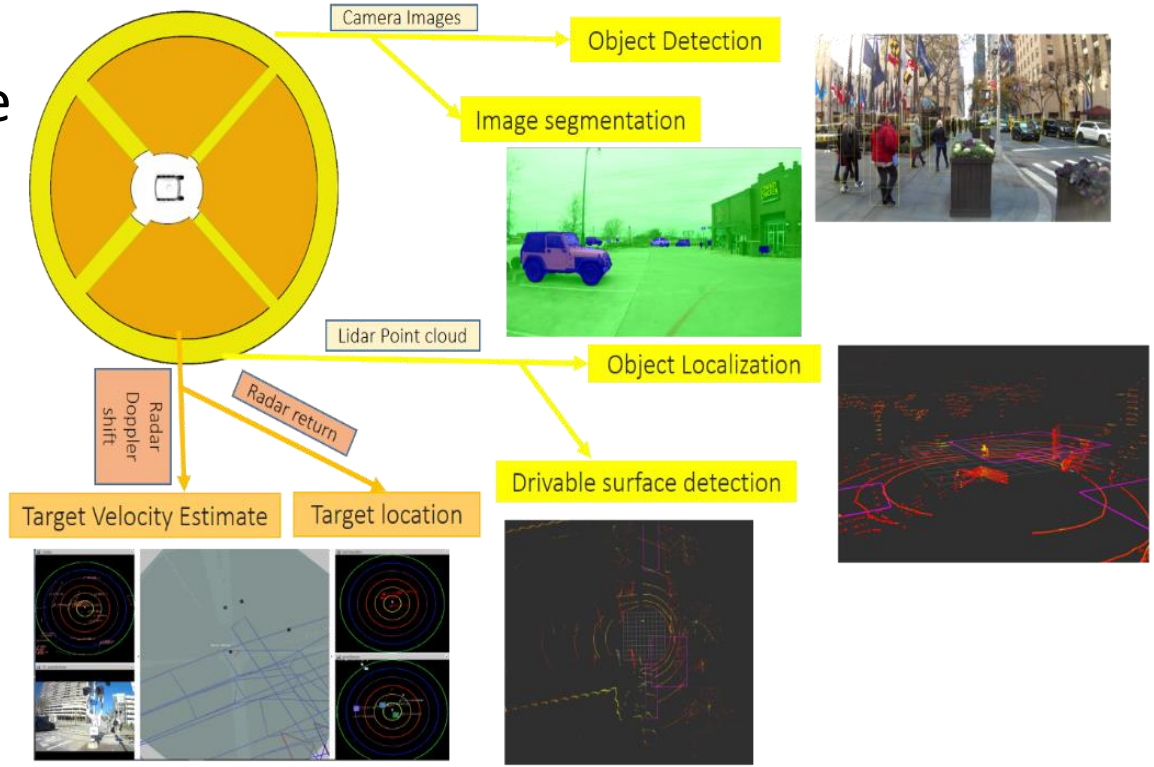
Example

Approaches to Tackle Complexity

- Up front system engineering.
- Comprehensive problem and solution understanding first.
- Avoid early solution constraints.

Approaches to Tackle Complexity

- Dissect into manageable components.
- Clear interfaces.



Approaches to Tackle Complexity

- Iterate rapidly through representative proof of concepts to validate technology suitability.
- Rigorous tests to refine understanding of technology.
- Integrate adjacent technologies early.

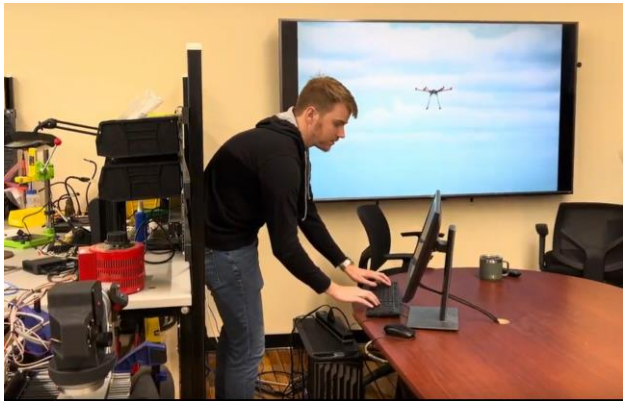
Example

Data Management in Complex Systems

- Data management is pivotal in complex sensor-based systems.
- Organize data meticulously from inception.
- Document data origins and configurations rigorously.
- Ensure data accessibility for reuse and algorithm refinement as corner cases emerge.

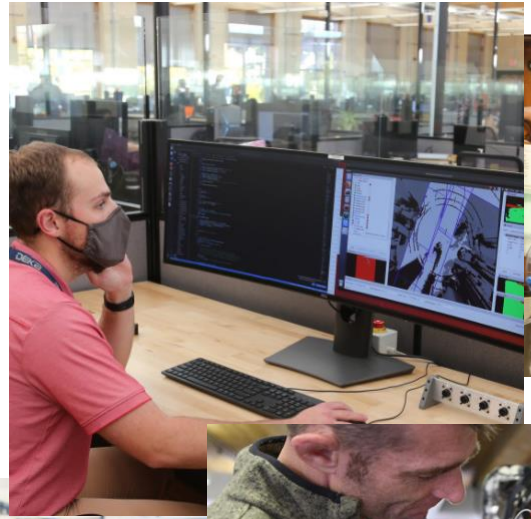
Simulation Accelerates Software Development and Testing

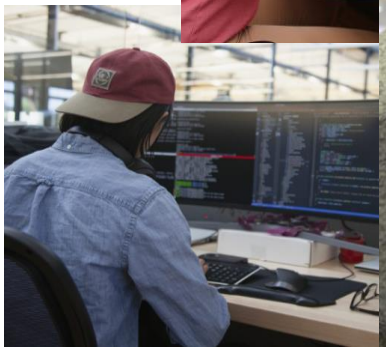
- Tailor simulations to specific tasks.
- Don’t overcomplicate for hypothetical future use.
- Leverage simulations for replaying real-world data.
- Employ hardware in the loop.



Team Organization for Complex System Development

- Small teams.
- Multi disciplinary.
- Focused leads.
- Clear short terms objectives.
- Well defined overarching goals.





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