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Background

Sentient Science (Current):

Product & Technology development for modeling and simulation technologies for:

- Fatigue life Prediction
- Microstructure Prediction
- Material Design and Discovery
- Additive Manufacturing process simulation and monitoring
- Digital twins and predictive prognostics

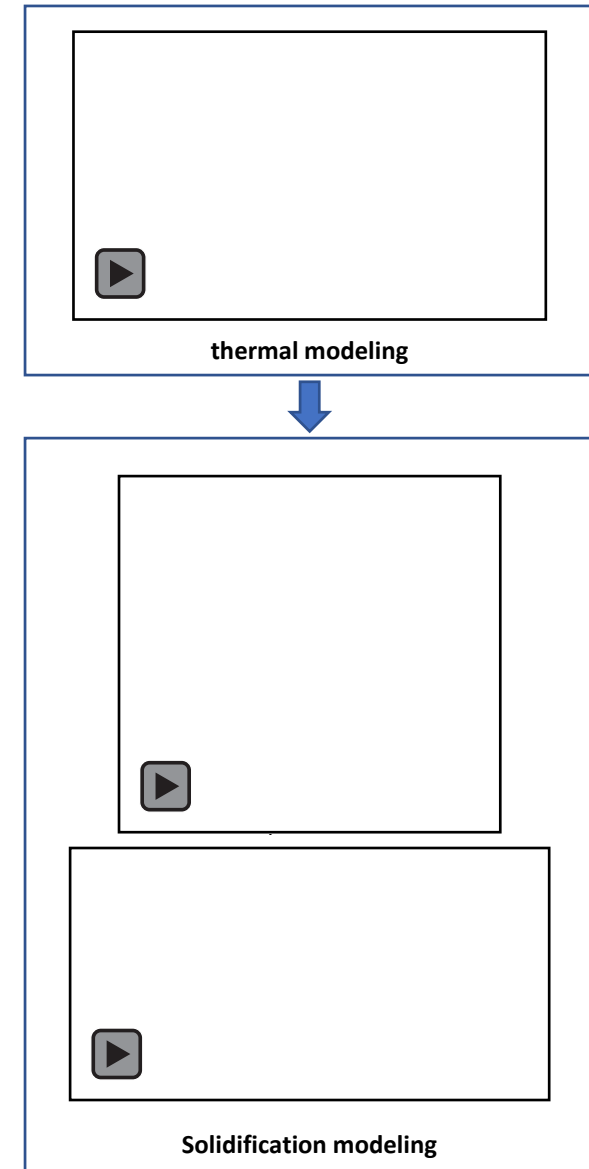
Recent Experience:

- Manager of software and engineering team developing tools and methods for turbine Durability prediction (Pratt & Whitney)
- Research & Technology road-mapping for power thermal management systems, aircraft electrification and model based digital thread (UTC)
- Compression systems development for advanced commercial and military jet engines (Pratt & Whitney)

Heterogenous Materials Development and Design

Need for rapid and accurate material microstructure tools

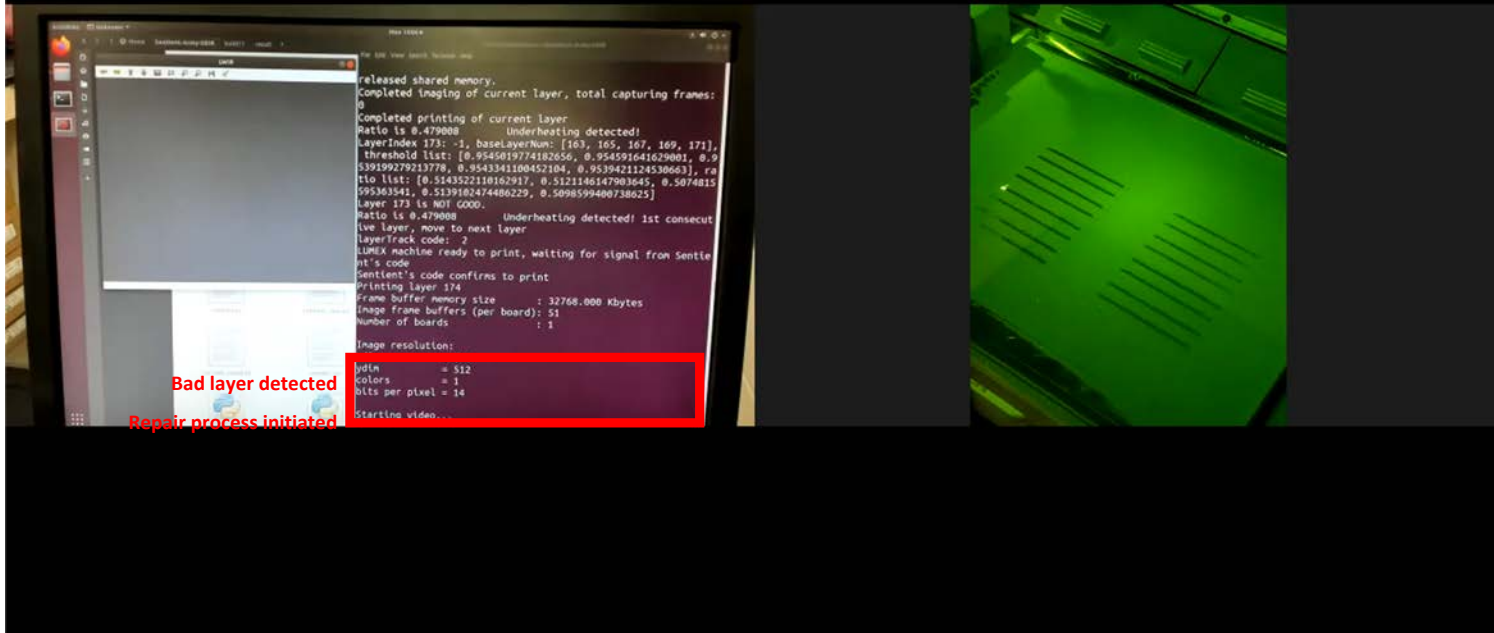
- AM techniques allow for embedding heterogenous materials in components in new and interesting ways.
- Need to understand microstructure to understand part performance
 - How microstructure evolves after different manufacturing operations
- The ability to “virtually test” components with heterogenous materials will be key to lowering cost and understanding part function
 - Cloud computing lowers barriers for entry for high performance computing needed.
- Access to Machine API's, material and machine data



In-Situ Defect Detection & Repair

Convergent platforms will rely on models as a part of quality assurance

Abnormal print layers identified, triggering cutting/reprinting program



- Need to understand intended microstructure at interfaces of heterogenous materials is critical for quality assurance
- Convergent manufacturing platforms will need in in-situ monitoring and defect correction capabilities.
- This will require ability to:
 - Quickly develop material models
 - Share material models seamlessly
 - Open access to Machine APIs