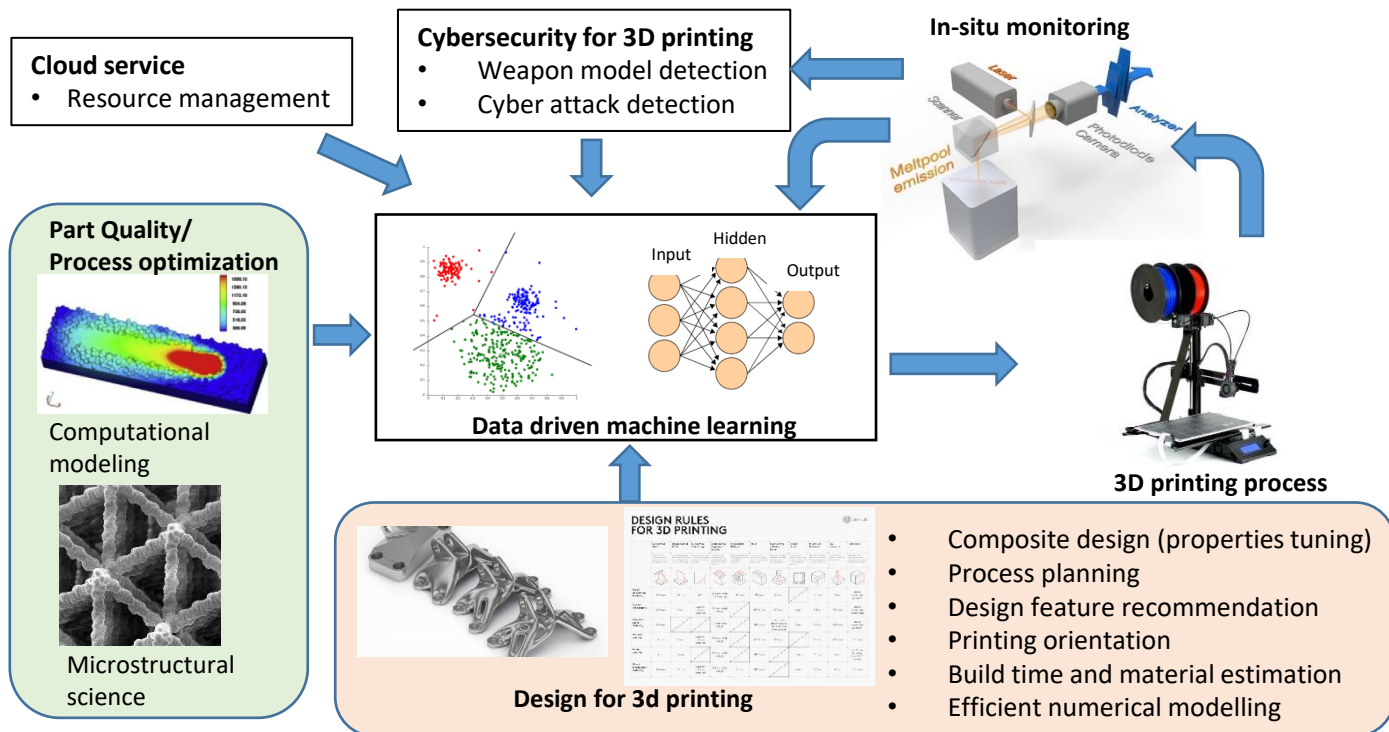


Machine Learning for 3D printing

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1. Applications of ML in 3D printing

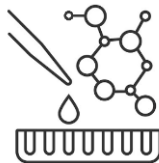


2. Potential fields



Medical

Material tuning of multi-material printing to realize tissue-mimicking anatomical models



Tissue Engineering

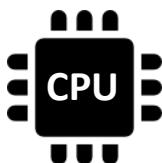
Predicting material properties of the various mixture composition of the bio-inks as well as coming up with new scaffold designs



Building & construction

- New and novel data-driven design of 3D printable structures
- Optimize process plans and the material consumption and reduce the build time

3. Challenges



Computational cost

- Long training time
- Long inference time for high frame rate melt pool monitoring



Standards for qualification

Standards for data acquisition and pre-processing of the data would ensure sharing of data and encourage collaboration among the AM community.



Data acquisition techniques

- Require high refresh rate and high resolution to capture the information of the melt pools
- Suitable for in-situ monitoring
 - Survive in harsh printing environment