



Aalto University
School of Engineering

Practical 3D-printing

Meng Wang, Siddharth Jayaprakash, Vuong Vo

Purpose

- **Capabilities of a commercial desktop 3D printer**
- **Steps in 3D printing – The process**
- **Demo using MakerBot 3D printer**

Capabilities

- **Lattice structures**
- **Conformal channels**
- **Moving parts**
- **Structure optimization**

Lattice structures

- High strength-to-weight ratio
- Excellent shock absorption
- More surface area
- Vibration reduction



Source: Fast Radius Inc.

Conformal channels

- Reduces cooling time
- Uniform cooling
- Quality enhancement of mould parts
- Applications in automotive industry, injection moulding etc.



Source: Forefront AM

Moving parts

- Print assemblies
- Improves quality
 - Rather than assembling small weak parts
- Reduces time for prototyping



Topology optimization

- **Optimizing structure geometry using numerical methods**
- **Design freedom**
- **Reduces weight, costs & material wastage**
- **Application areas include aerospace & automobile industries**



Source: Prodways

Support structures

- In case of overhangs and bridges
- Not all overhangs and bridges need support



Support structures

