Outline

follows the structure of the report

- Introduction
- Mesh-based Modeling of Cuts
- Finite Element Simulation for Virtual Cutting
- Numerical Solvers
- Meshfree Methods
- Summary & Application Study
- Discussion & Conclusion

Summary

- Mesh-based Modeling of Cuts
- Finite Element Simulation for Virtual Cutting
- Numerical Solvers
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Future Challenges

- Benchmark problems for virtual cutting methods

- Real-world material properties
  - Nonlinear, anisotropic, viscoelastic, viscoplastic materials

- Parallelization on multi-core and multi-GPU architectures
  - Inherently sequential parts
  - Bandwidth and latency bottleneck

- Physical interaction between a scalpel and soft tissues

- Efficient numerical solution techniques on irregular adaptive spatial discretizations

Cutting Is All Around Us!

footage.shutterstock.com   pfollansbee.wordpress.com

How to simulate these interesting cutting effects?

www.hurriyetdailynews.com   wb-3d.com   en.wikipedia.org

Thank you for your attention!