MIT Center for Bits and Atoms

Video tour

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Introduction

- 4 video clips
- Generally – move from long term research to current uses
- MIT's lab building machine

Video #1 - introduction

History of MIT machine building

Start with very small sizes and biological work

Move to larger sizes

Video #1 - Discussion

Tools for:

Communicating with bacteria

Mapping structures down to genome level

3D visualization

Video #2
Introduction

- New machining tools
- Their biggest project:
- Assemblers to assemble assemblers to assemble assemblers – from the parts being assembled
- Small and "simple" assemblers to make all types of products

Video #2 - Discussion

- Designing tools to facilitate assembling, disassembling, cutting and folding
- New products from these combinations of processes
- Origami design tools
- Tight packing and efficiency with thousands or millions of parts
- Machine interaction with product with minimal instruction

Video # 3 - Introduction

- Moving from:
- Computers *controlling* machines to
- Computers *making* machines
- Rapid prototyping of rapid prototyping

Video 3 - Discussion

- From preprogramming entire process to machine looking for the controller needed to complete the process

- So – machines used to make other machines – which can then make the needed part

Video # 4 - Introduction

Longest video

Tools get bigger

Cutting and folding instead of depositing and etching (adding and subtraction)

Origami to Kyrigami

Video # 4 - Discussion

- Design in 2D for 3D product
- Cutting vs. 3D printing

- Summary (3 axes):
- 1) bits ~~to~~ atoms; ~~atoms~~ to bits:
- Nano   Micro   Mezo   Macro

- 2) nesting
- Research tools
- making machines
- Printers, cutters, etc. to make projects
- Machines made by machines

- 3) evolution of the machines
- Computers controlling machines
- Rapid prototyping of rapid prototyping
- Rapid automation to replace additive or subtractive processes
- Assembling and disassembling replaces other processes
- Assemblers to assemble assemblers to assemble assemblers
- Self reproducing machines(robots to make robots to make robots)