



**Technion-Israel Institute of Technology**  
**Computer Science Department**  
**Center for Graphics and Geometric Computing**



## **CGGC Seminar**

**Adriana Schulz**

MIT Computer Graphics Group

### **Computational Design for the Next Manufacturing Revolution**

Over the next few decades, we are going to transition to a new economy where highly complex, customizable products are manufactured on demand by flexible robotic systems. This change is already underway in a number of fields. 3D printers are revolutionizing production of metal parts in aerospace, automotive, and medical industries. Whole garment knitting machines allow automated production of complex apparel and shoes. Manufacturing electronics on flexible substrates opens the door to a whole new range of products for consumer electronics and medical diagnostics. Collaborative robots, such as Baxter from Rethink Robotics, allow flexible and automated assembly of complex objects. Overall, these new machines enable batch-one manufacturing of products that have unprecedented complexity.

In my talk, I argue that the field of computational design is essential for the next revolution in manufacturing. This new field has to embrace the following key concepts. First, new design methods have to become more intelligent by utilizing large data repositories and associated machine learning methods. Second, design tools need to transition from declarative to functional, automatically translating functional specifications of an object to manufacturing instructions. Third, workflows need to support concurrent design of shape, materials, control, and software in order to simplify the process and fully utilize the design space. I will showcase how these three concepts are applied by developing new systems for designing robots, drones, and furniture. I will conclude my talk by discussing open problems and challenges for this new emerging research field.

**The lecture will be held on Tuesday, 28.11.2017, at 12:30, Taub 401**

**הזמנה זו מהווה אישור כניסה עם רכב לטכניון**