

**2014 11 21**

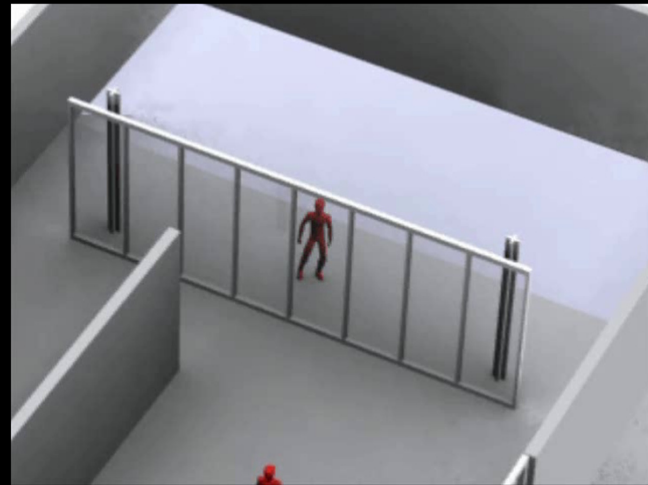
**The 7th International VR  
Symposium**

## Re-Action to Architectural Elements, Beyond Quantitative Simulations,

Agents uses **Stochastic Decision Making Algorithm.**

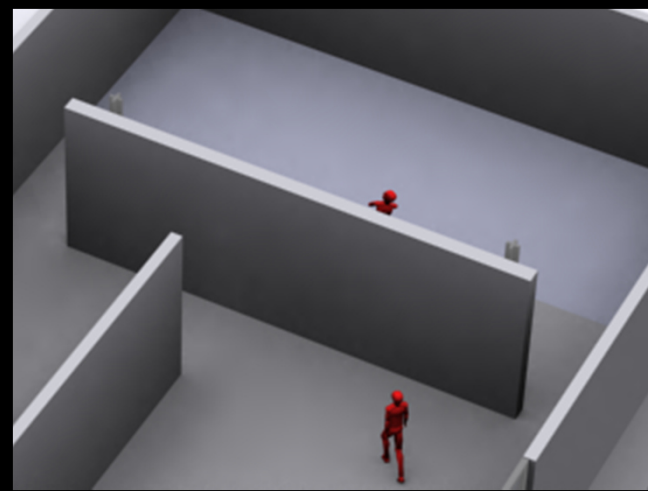
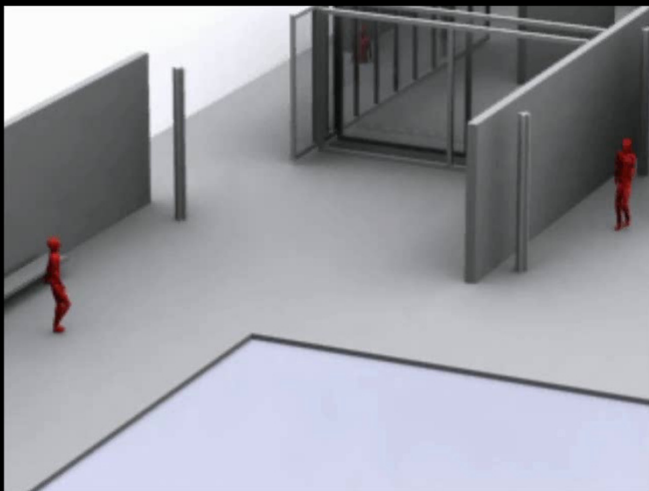
Re-Action 1:  
Attractor & Variable-dependent Reaction

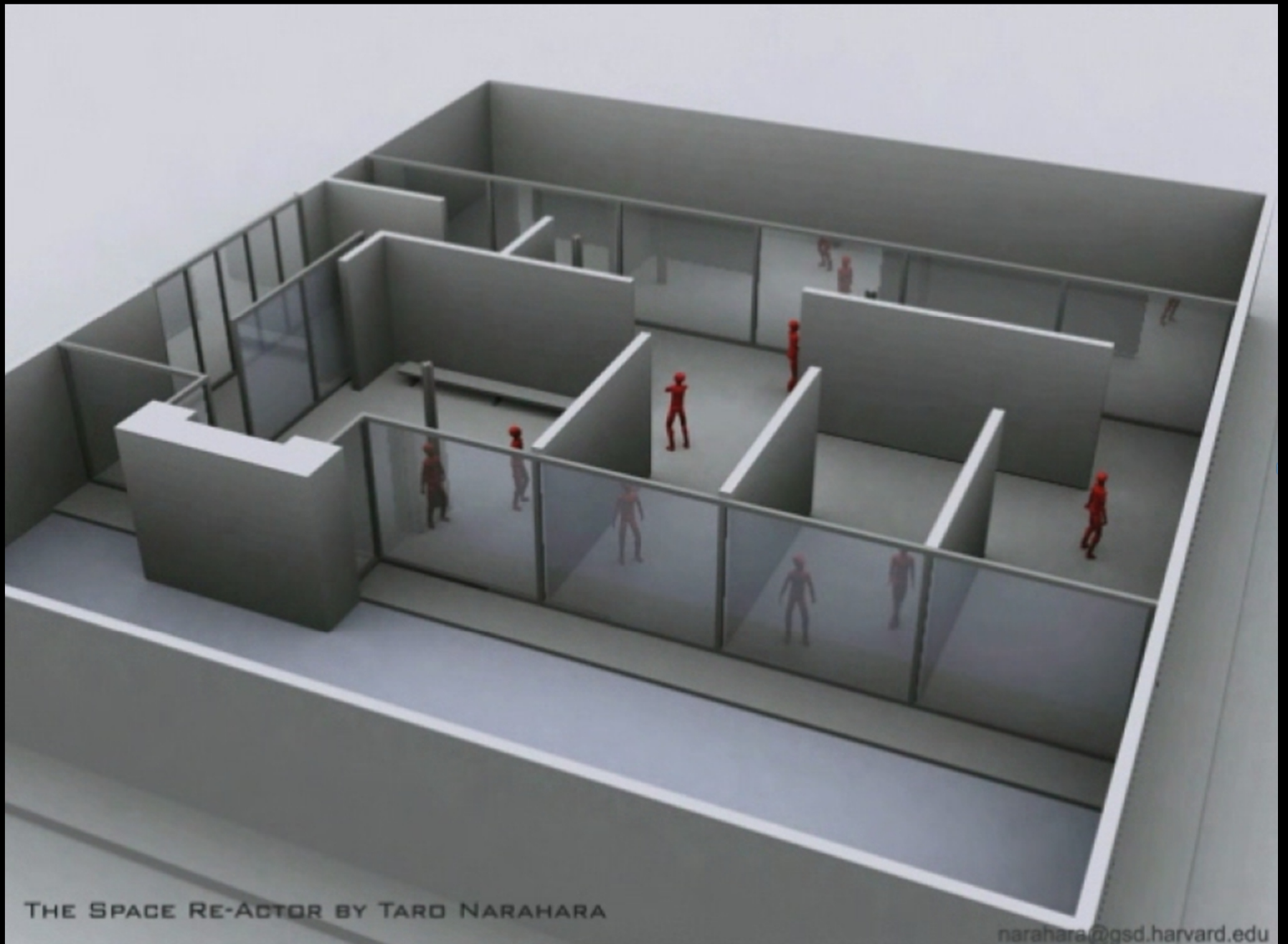
Re-Action 3a:  
Transparency: Visibility-based Reaction



Re-Action 2:  
Agents' Type-based Reaction Interaction

Re-Action 3b:  
Opacity: Visibility-based Reaction



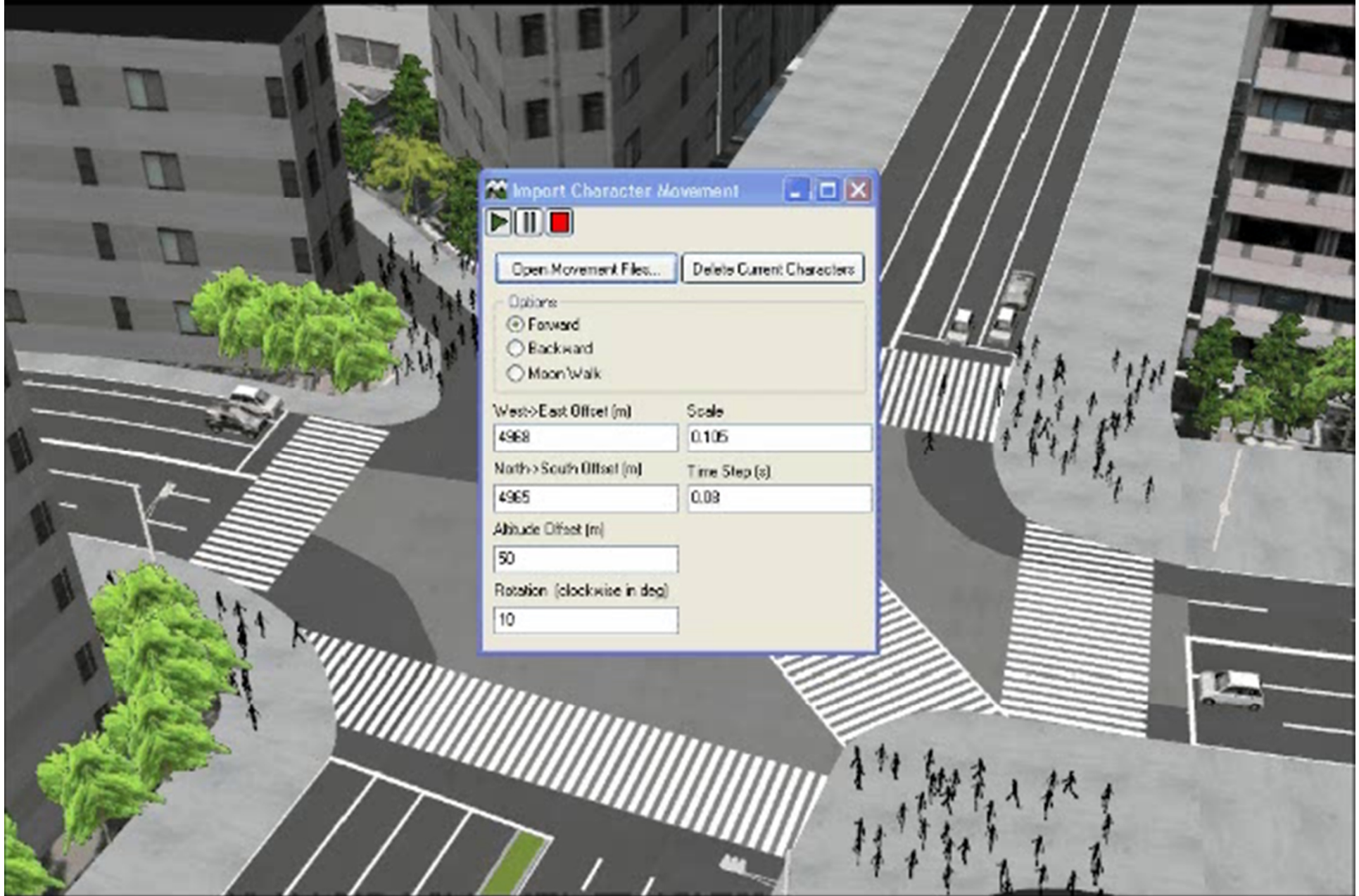


THE SPACE RE-ACTOR BY TARO NARAHARA

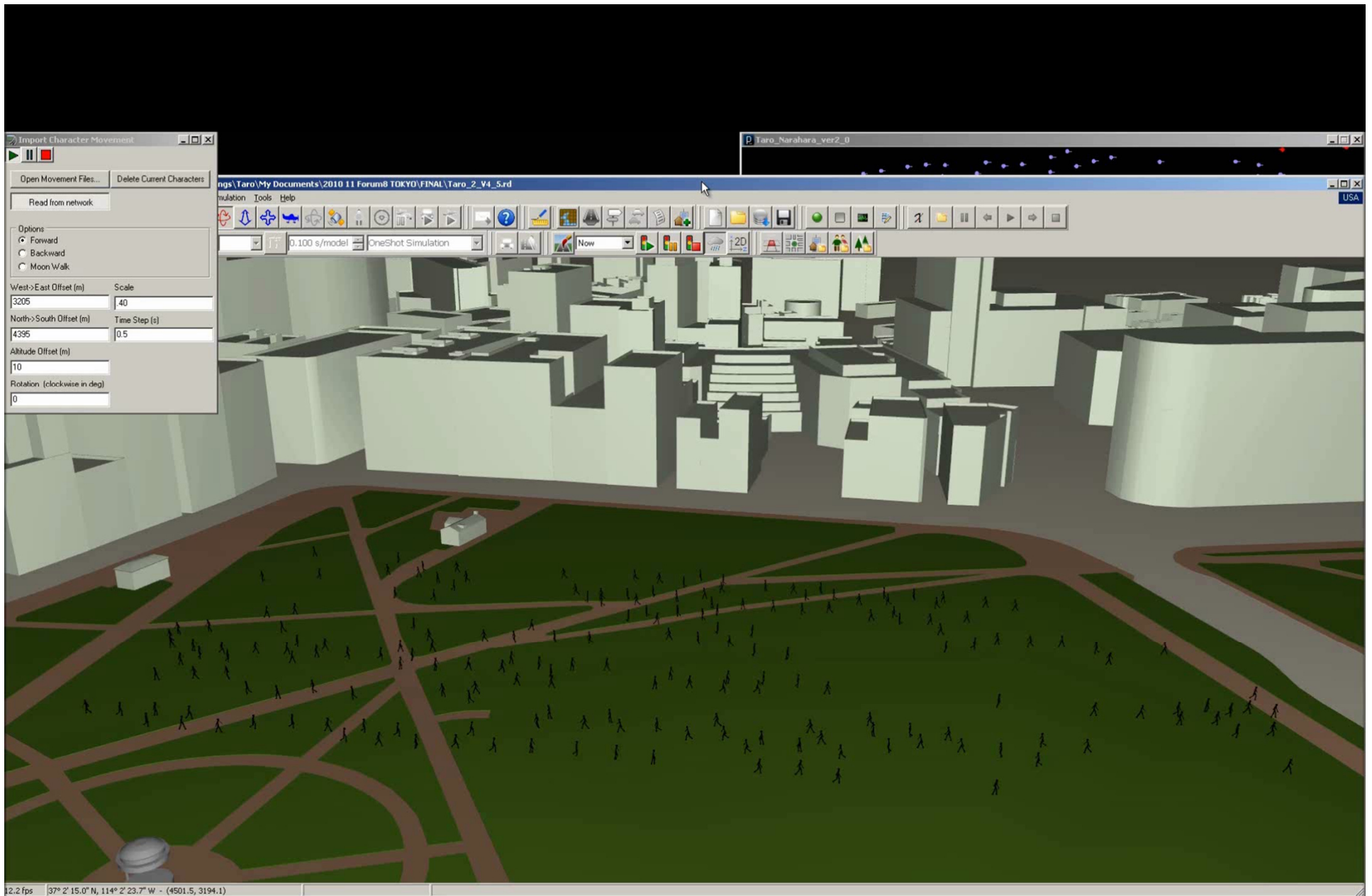
narahara@gsd.harvard.edu

Space ReActor: 建築空間上の人間行動可視化のシュミレーション 2007

Visualization of Pedestrian Crossing in Shibuya, Tokyo, Japan on UCwinRoad software.

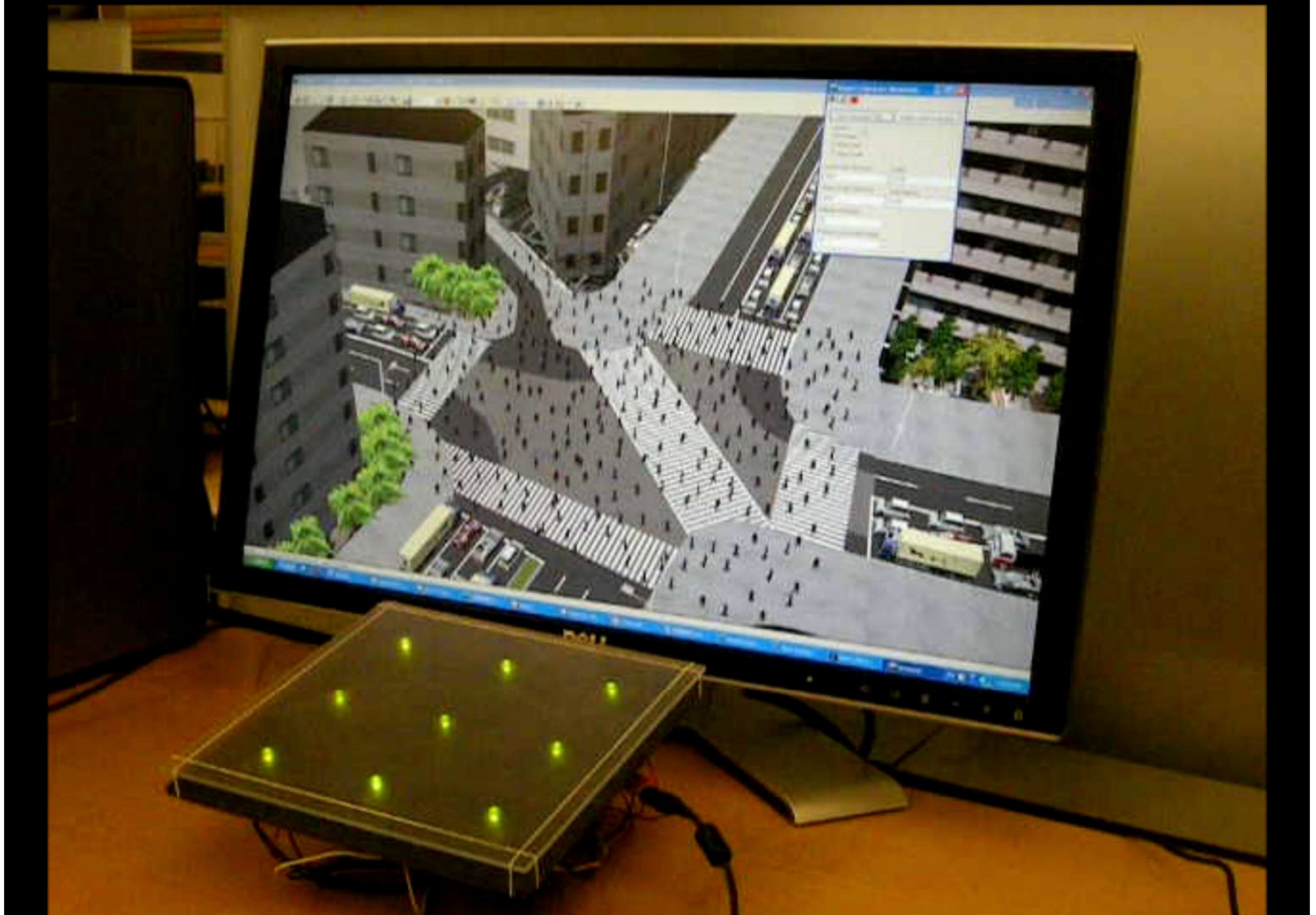


Implementation of Pedestrian Agents for Japanese software company, Forum8 (2008)



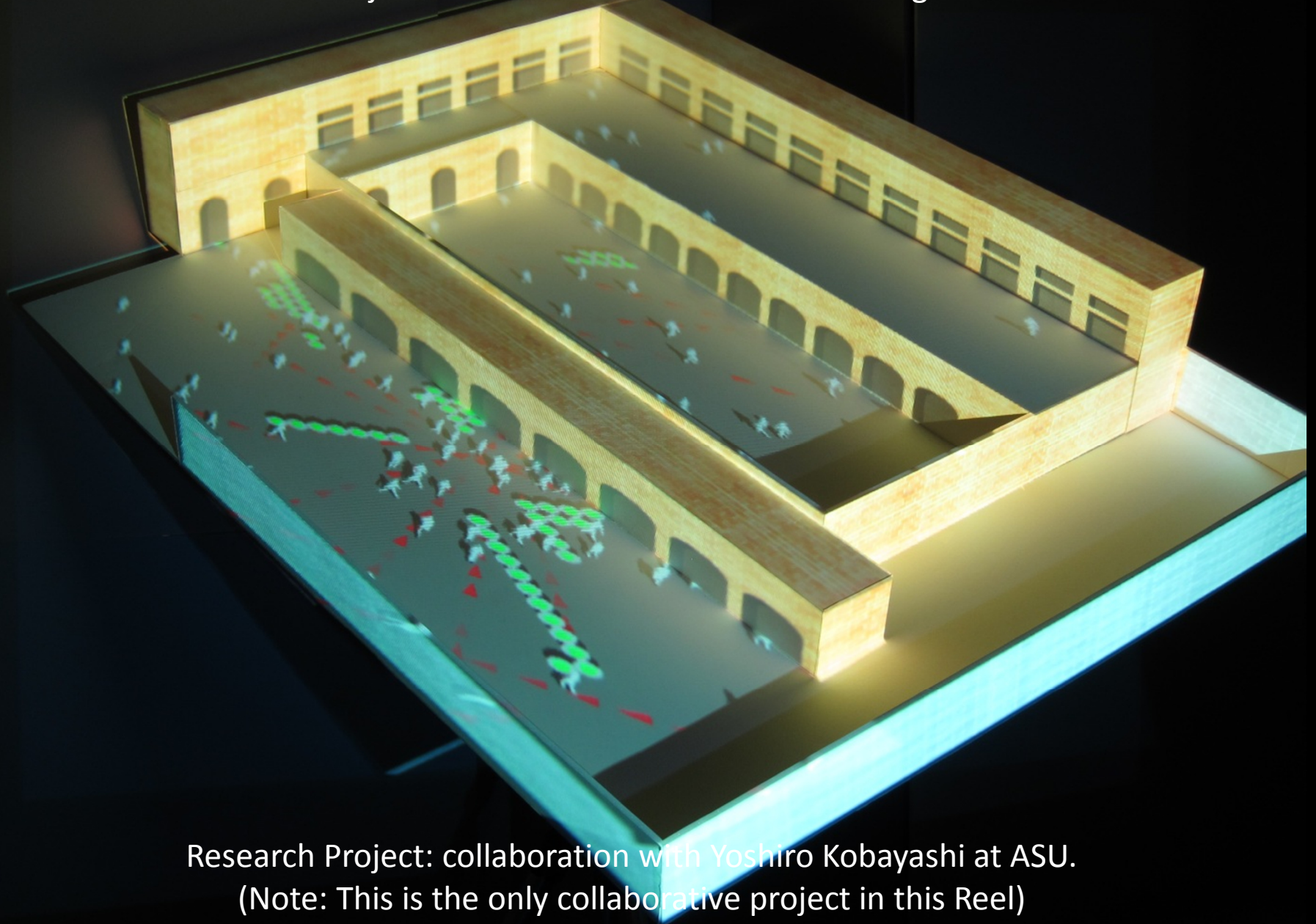
Software Development: Real-time Design Tool with Pedestrian Agents 2010

## Interactivity: Exploration in User Interfaces 2009



## Crowd Mapper:

Projection-based Interactive Pedestrian Agents



Research Project: collaboration with Yoshiro Kobayashi at ASU.  
(Note: This is the only collaborative project in this Reel)

*Teaching Interactivity:*

*School of Art + Design*

*New Jersey Institute of Technology (NJIT)*

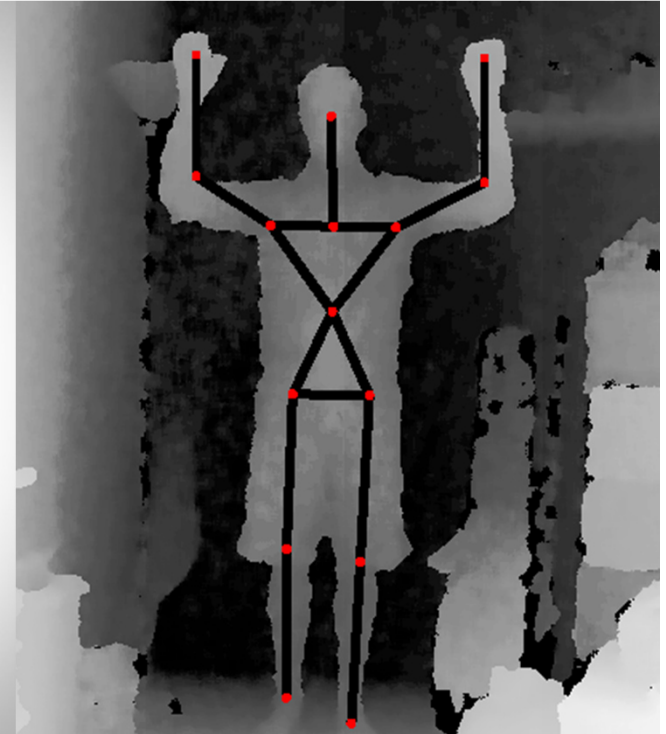


# Teaching: INTERACTIONS using SENSOR TECHNOLOGY

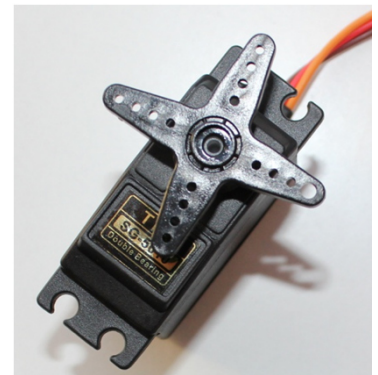
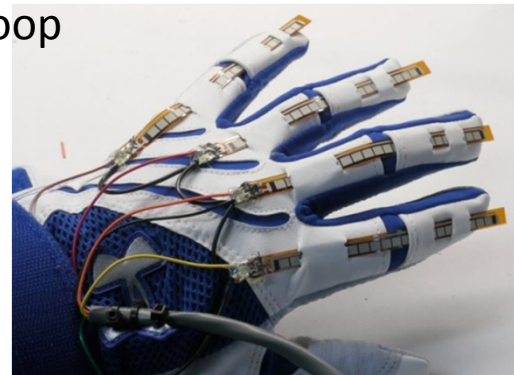
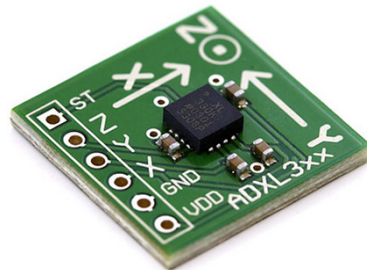
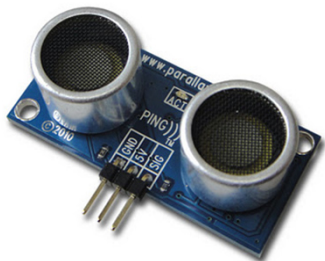
## Microsoft KINECT



- Depth Sensor
- Accelerometer (3-axis)
- RGB Camera
- Tilt motor (servo)
- Microphone
- \$100.00 (+/-)



## Sensors and Actuators to form Feedback loop



**NJIT:**

**AD490: Extreme FAB: Robotics for Architects and Designers**

**DD364: Digital Design Studio: Physical Computing Lab.**

# Teaching: INTERACTIONS using SENSOR TECHNOLOGY

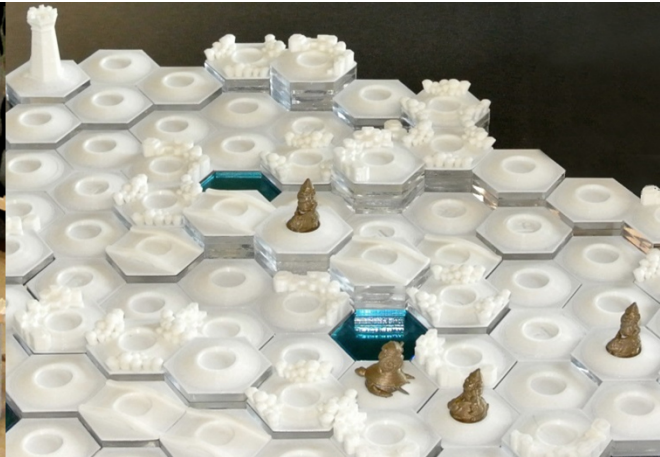
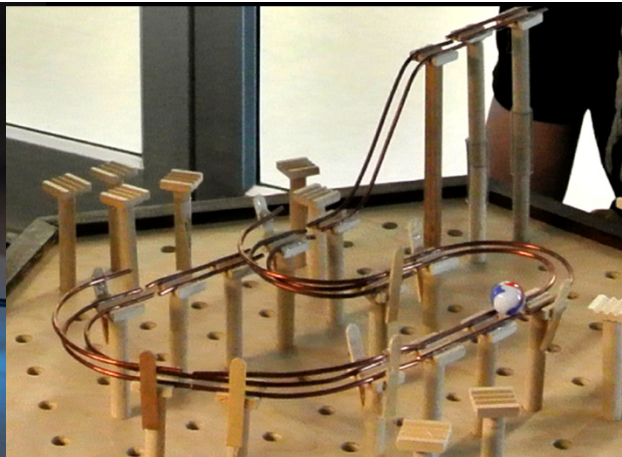
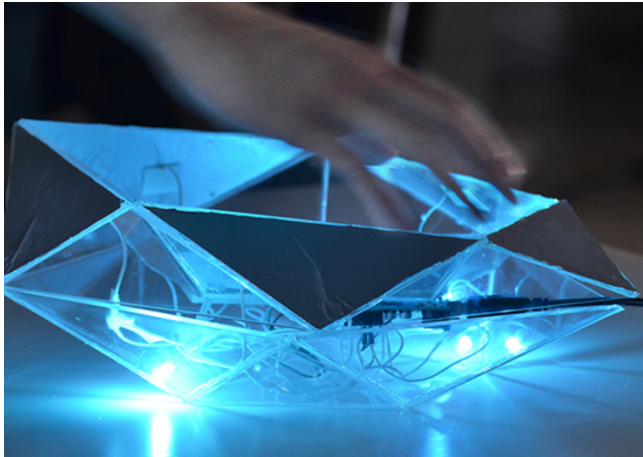


# SIGGRAPH2014: Learn Digital Fabrication through Gaming

SIGGRAPH 2014 TALKS:

Exploring Board Game Design Using Digital Technologies

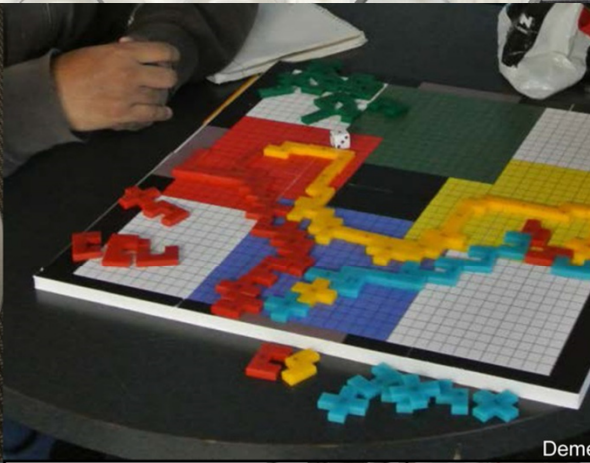
Taro Narahara  
New Jersey Institute of Technology



Alexander Nizzardo



Alan Valente & Brian Gunning



Deme



Sharon Feng & Shiao Alice Sung



Alyaman Alhayek

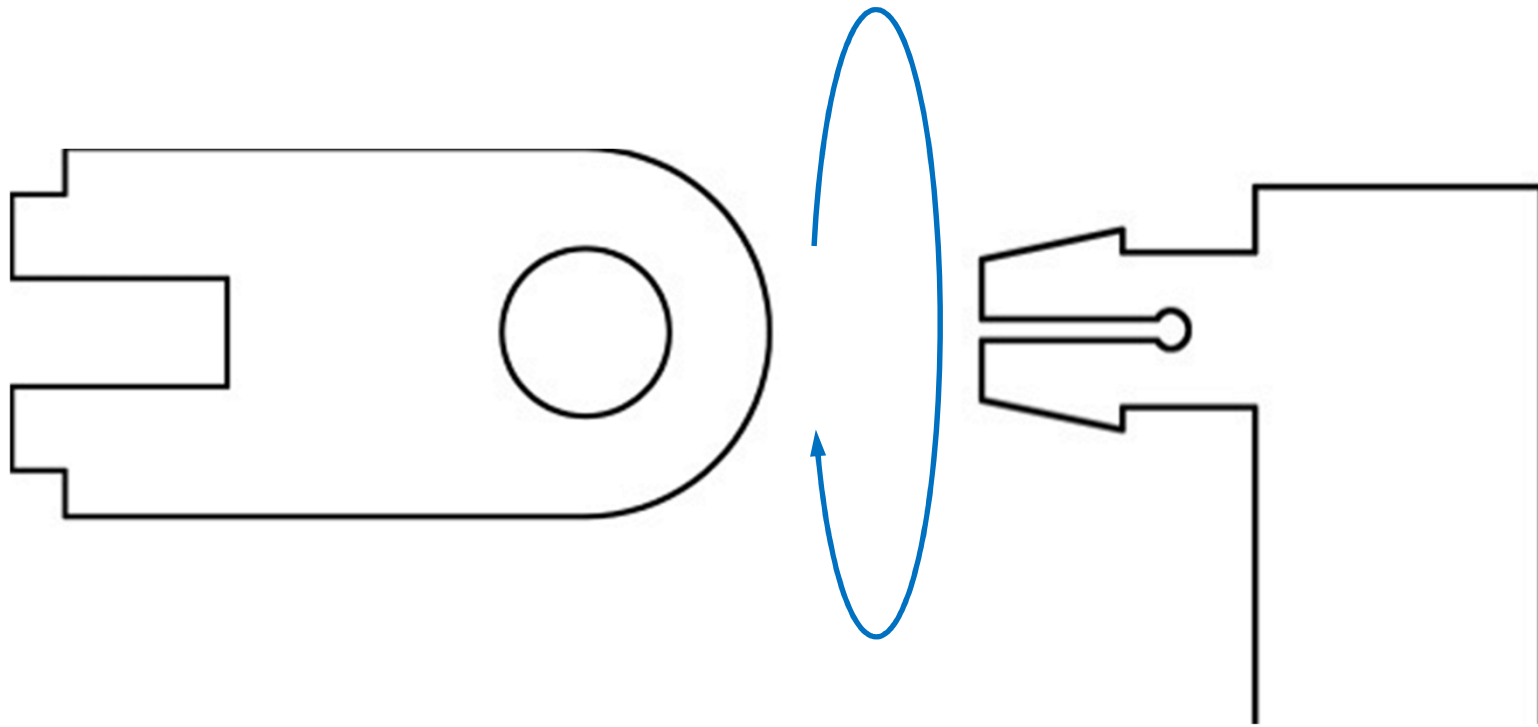


K

A Delta Robot kit introduces FAB & Inverse Kinematics  
可動模型製作、モーター制御、逆運動力学 を一日で体験学習



CAADRIA 2013 Workshop



*Snap-in friction-fit joint allows for rotation*

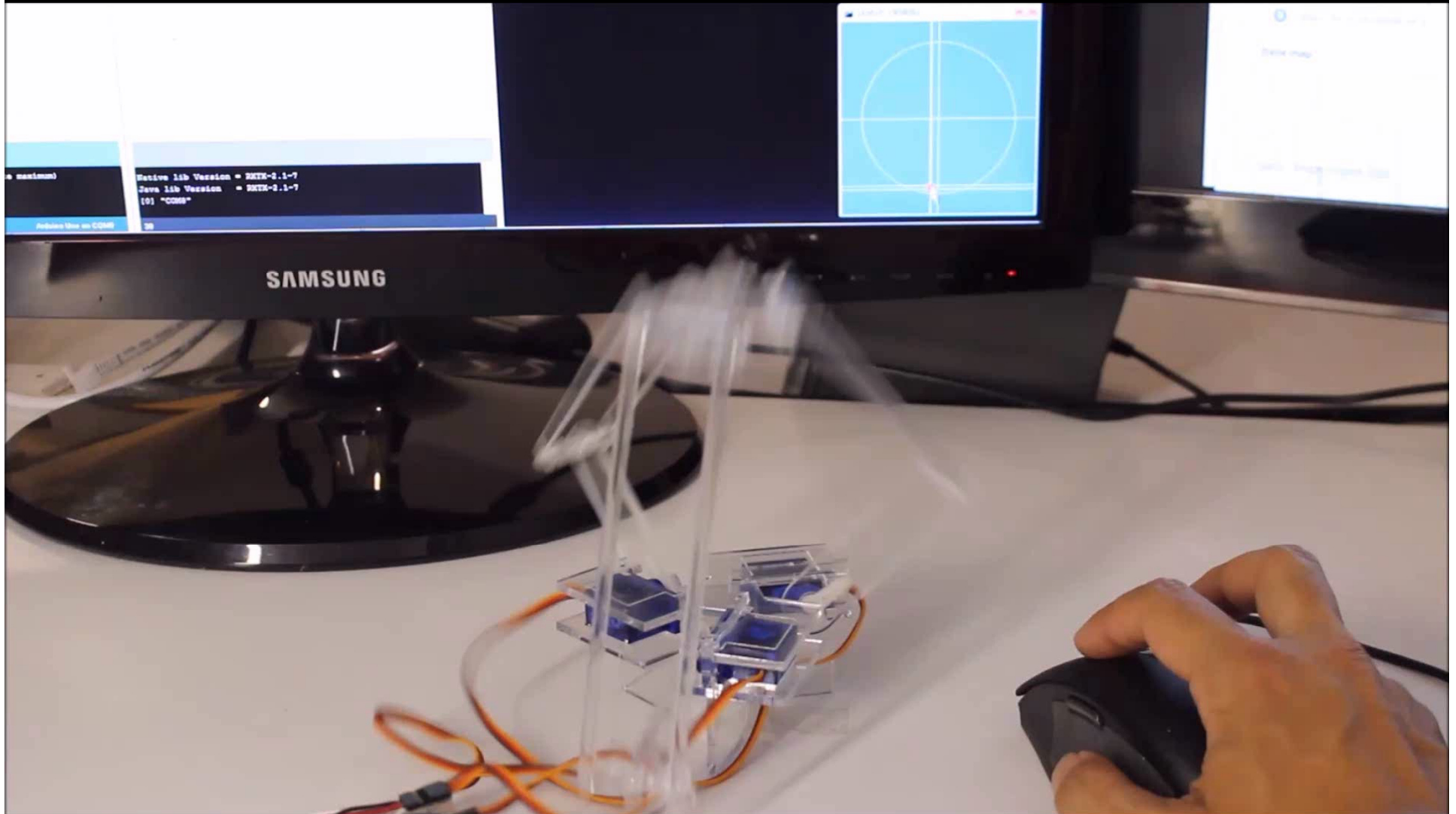
Delta Robot  
(Arduino)



Digital Application Interface  
(Processing)



Physical Interface  
(Kinect)

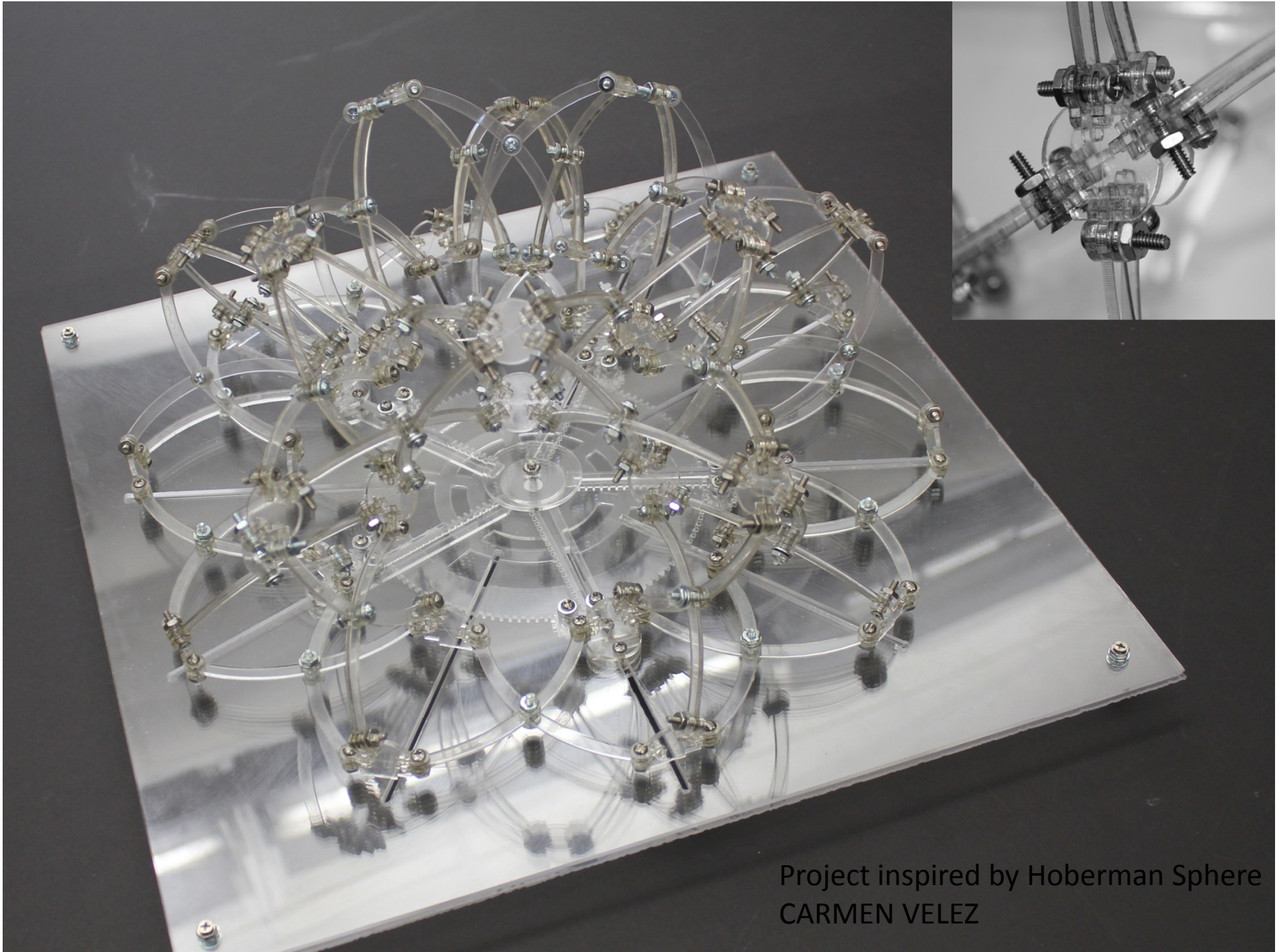


*Digital*



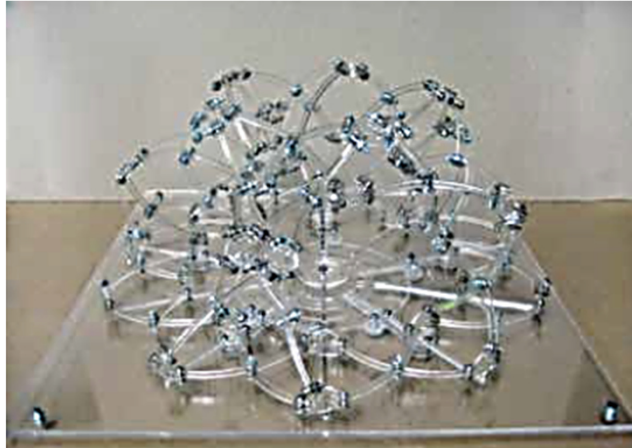
*Physical*

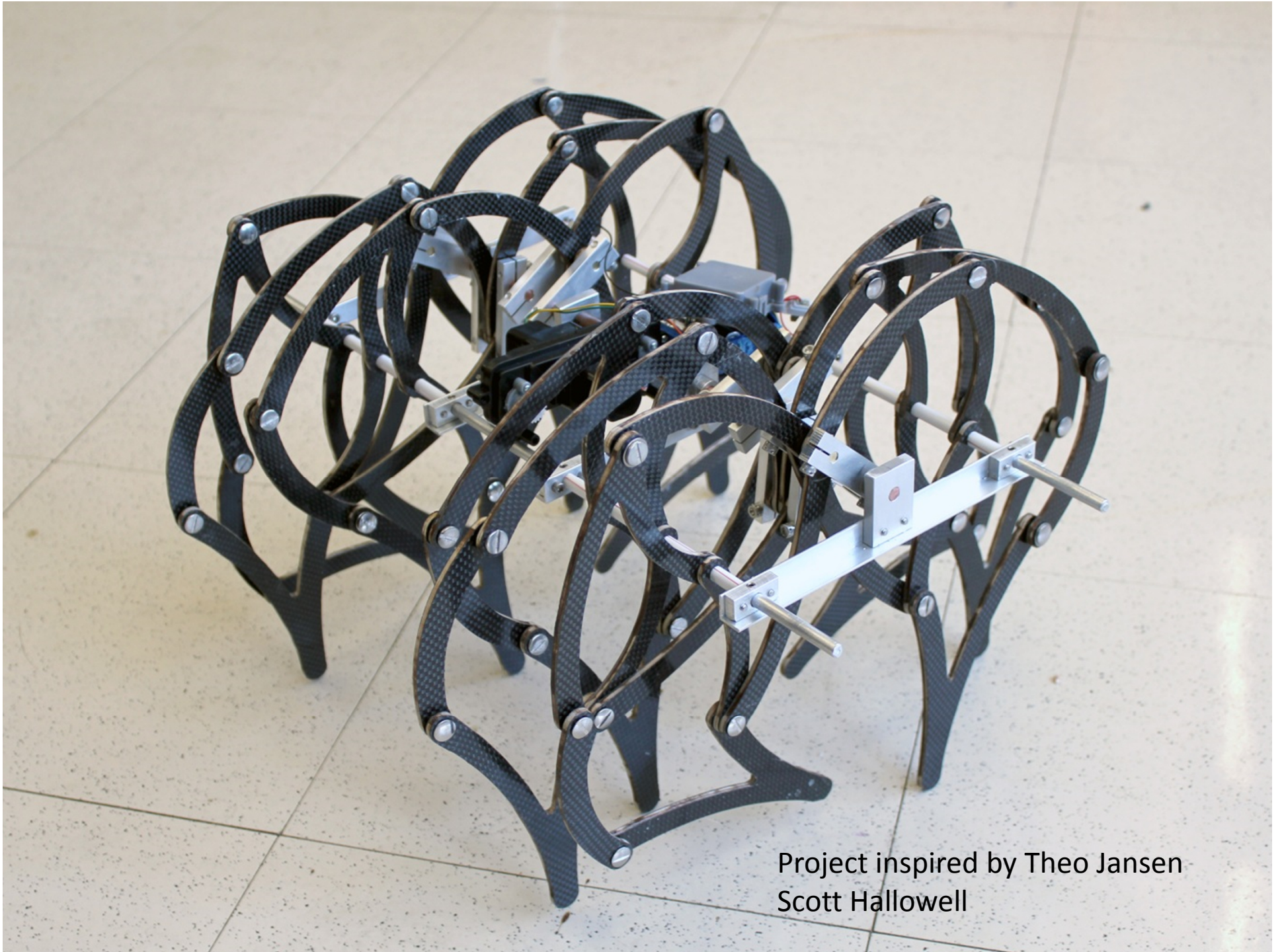
Introduces a basic concept of inverse kinematics to students



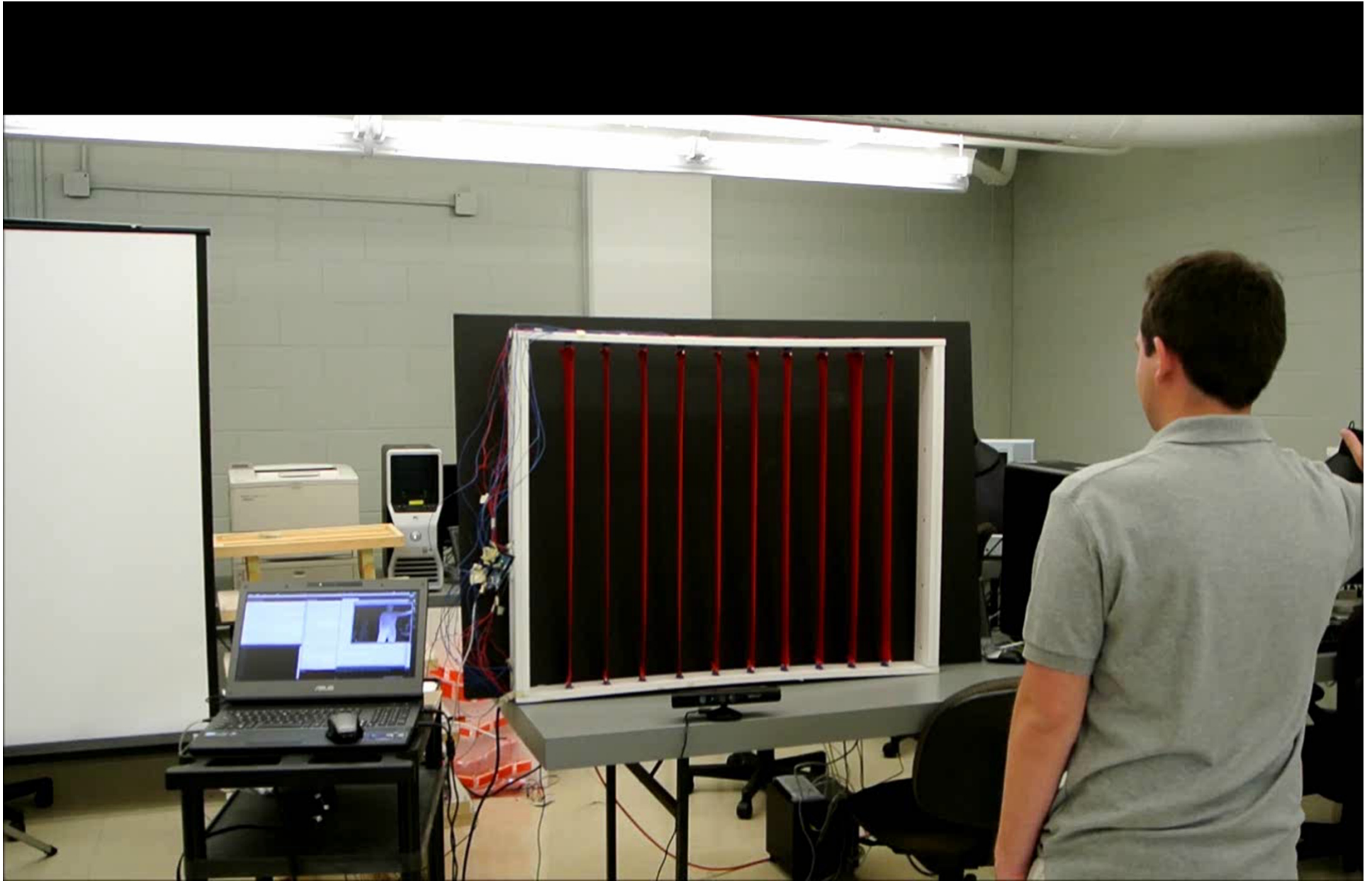
Project inspired by Hoberman Sphere  
CARMEN VELEZ



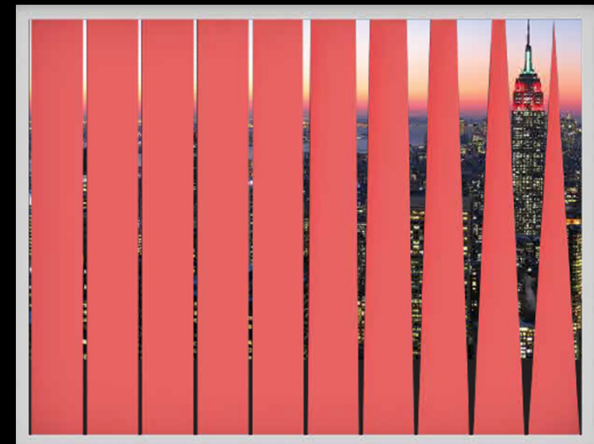
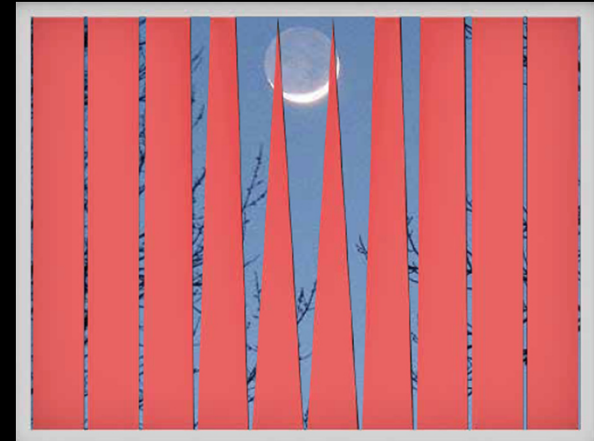
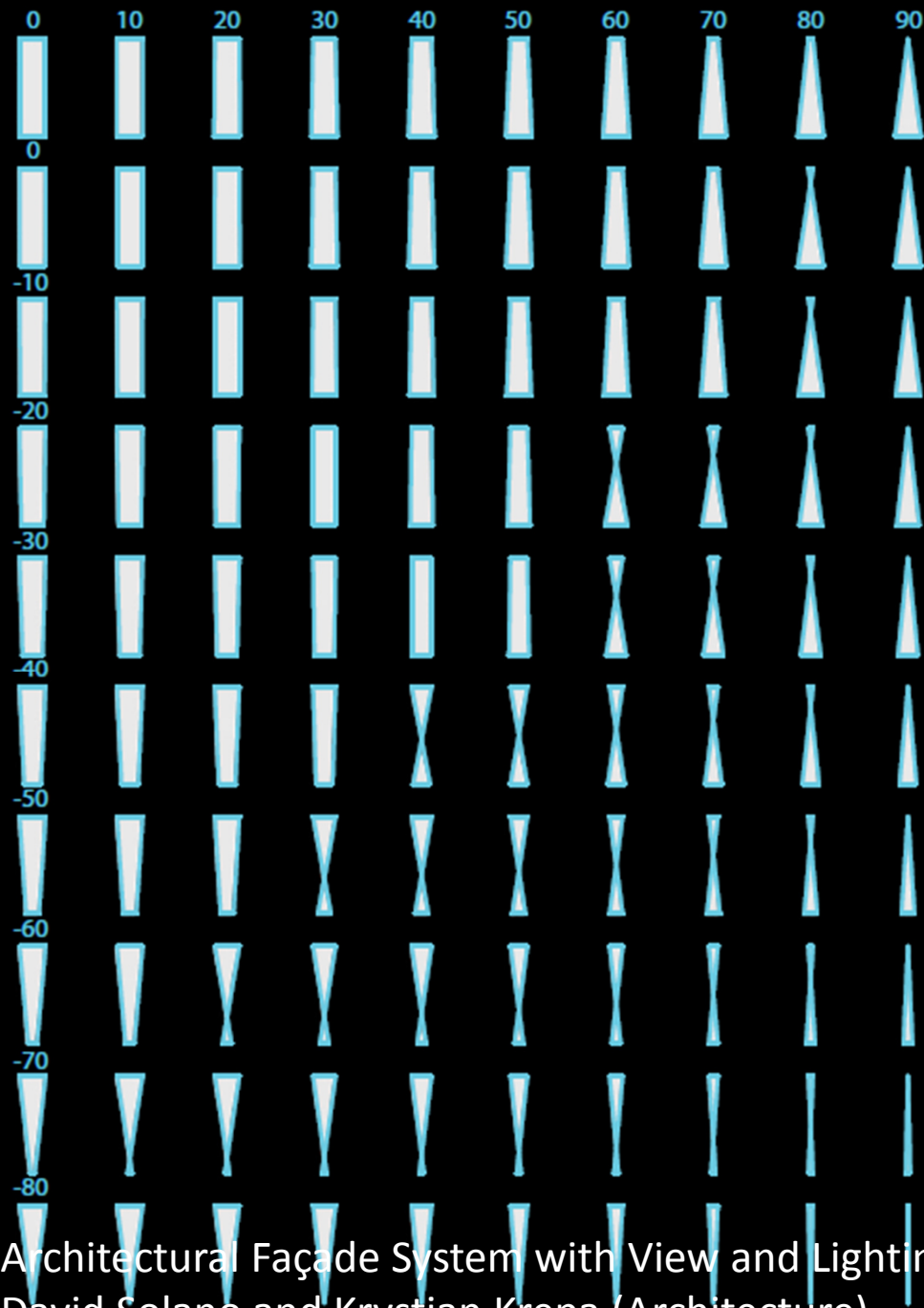




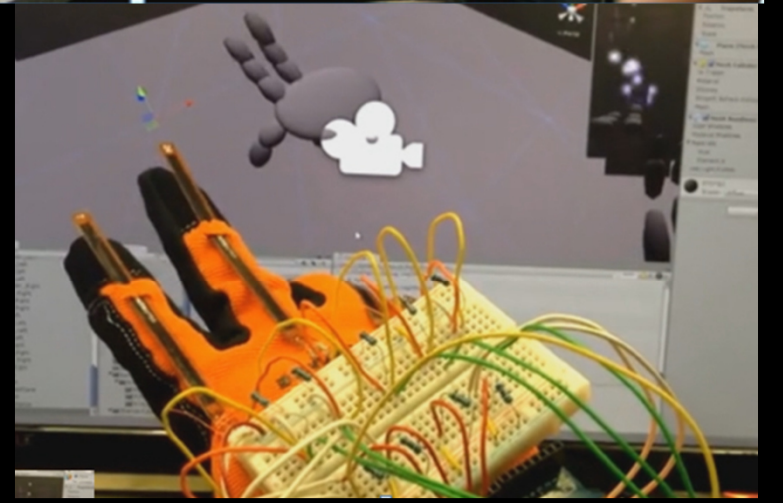
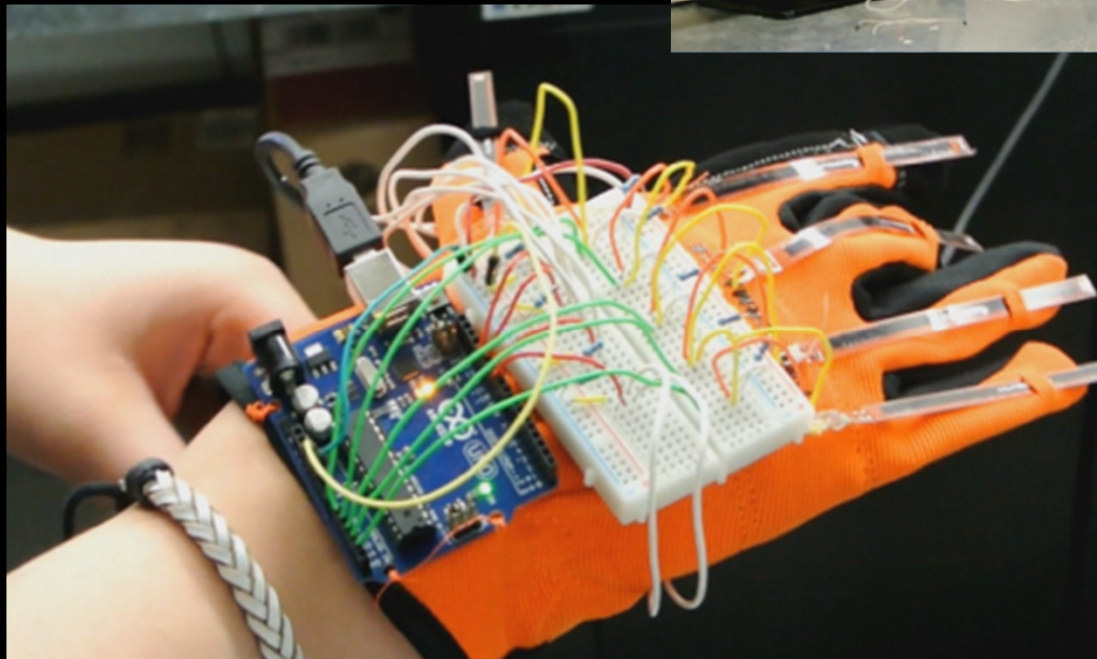
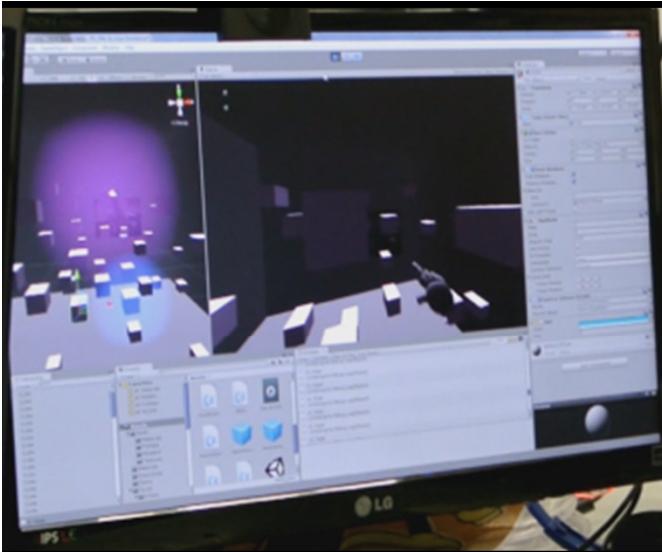
Project inspired by Theo Jansen  
Scott Hallowell




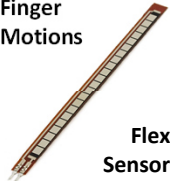

Architectural Façade System with View and Lighting Controls: (Arduino, Kinect, + Processing)  
David Solano and Krystian Krepa (Architecture)

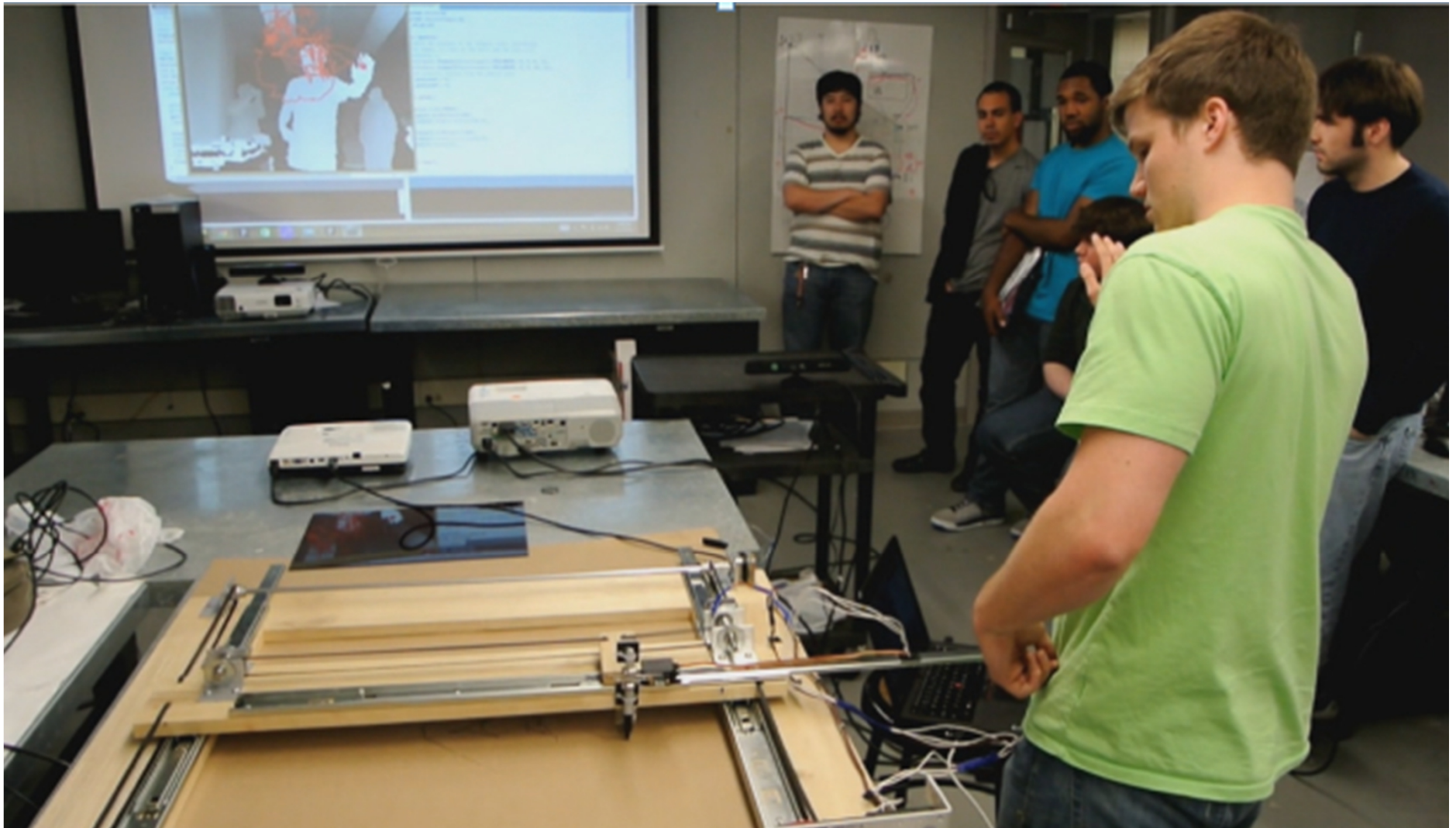


Architectural Façade System with View and Lighting Controls: (Arduino, Kinect, + Processing)  
David Solano and Krystian Krepa (Architecture)

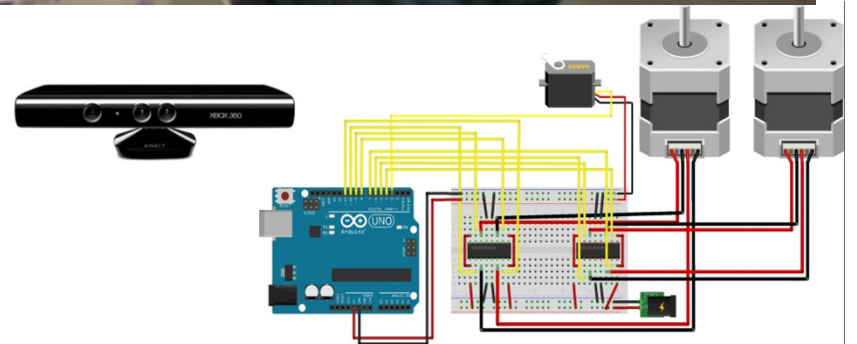
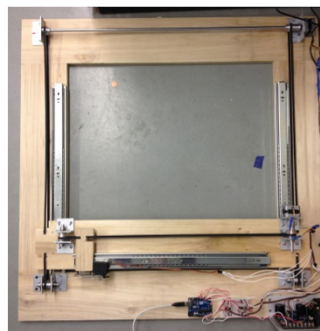


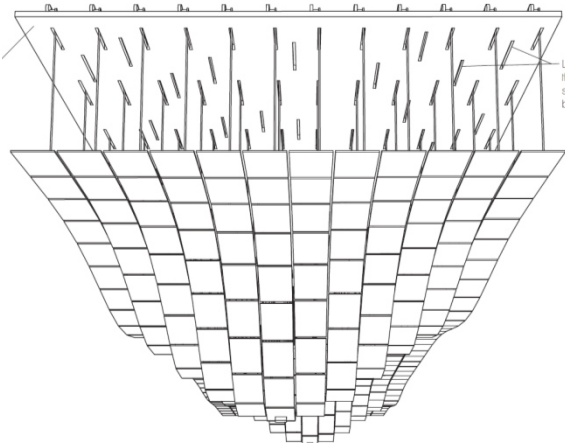
Haptic Glove: Amanda Cronce

<p><b>Motion/Gesture Tracking</b></p>  <p><b>Kinect</b></p>	<p><b>Finger Motions</b></p>  <p><b>Flex Sensor</b></p>	<p><b>Haptic Feedback</b></p>  <p><b>Vibration Motor</b></p>
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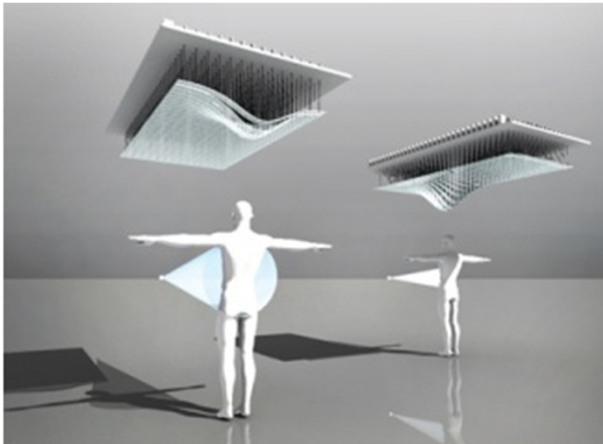


Gesture-based Sketching Tool:  
Jeremy Borghi

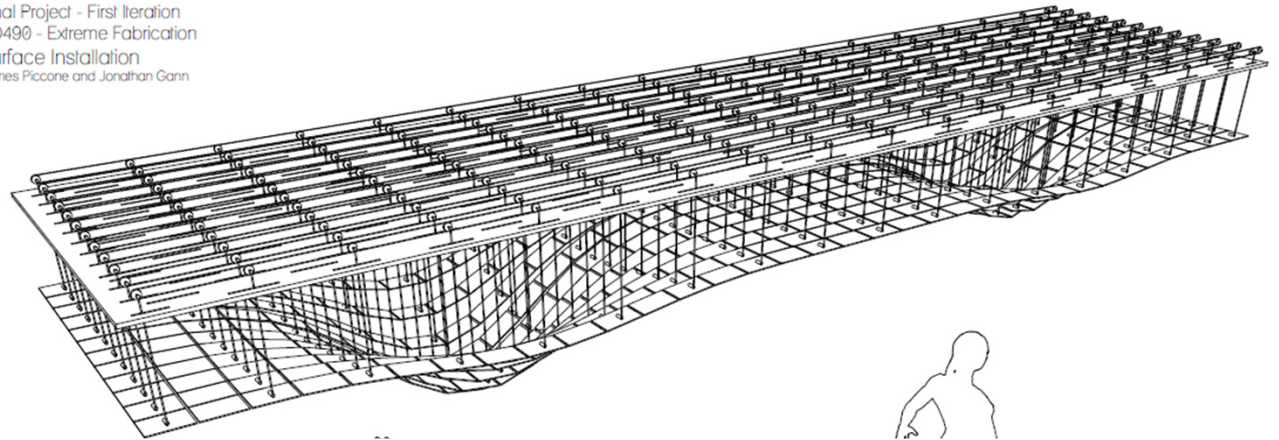




Ultrasonic Sensor:  
Used to track proximity of people to surface and generate inflection points

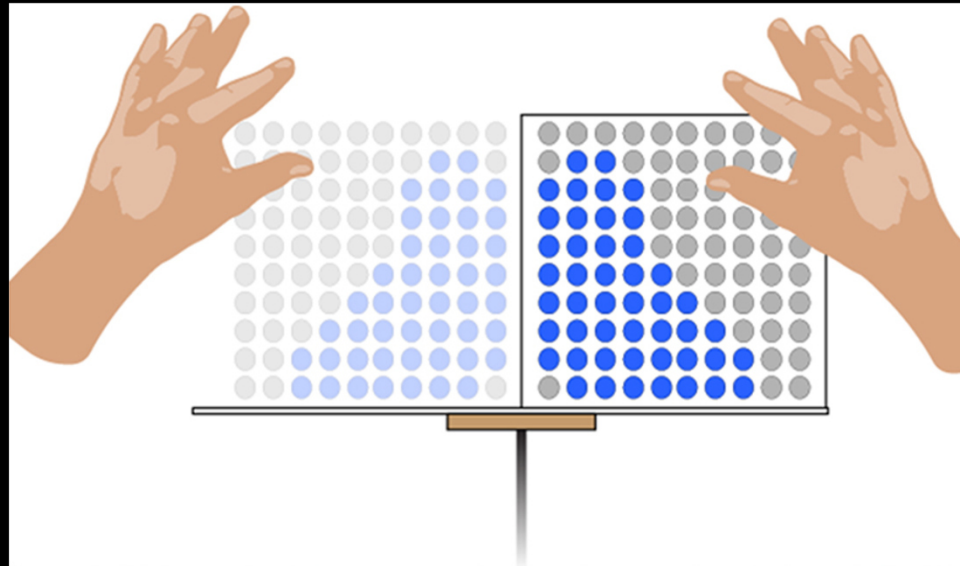
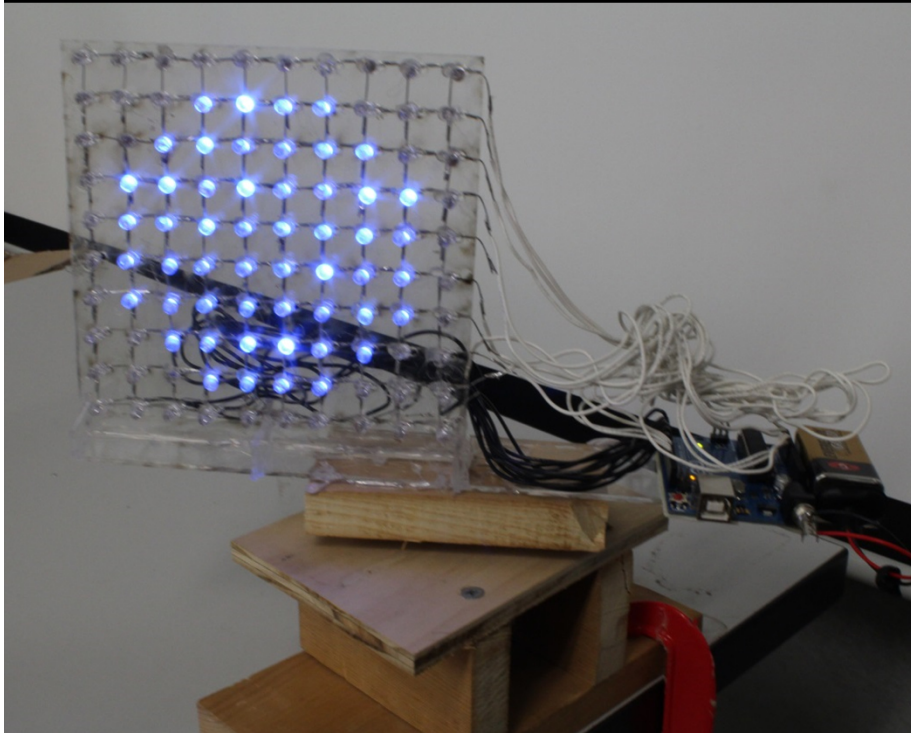


Final Project - First Iteration  
D490 - Extreme Fabrication  
Surface Installation  
James Piccone and Jonathan Gann

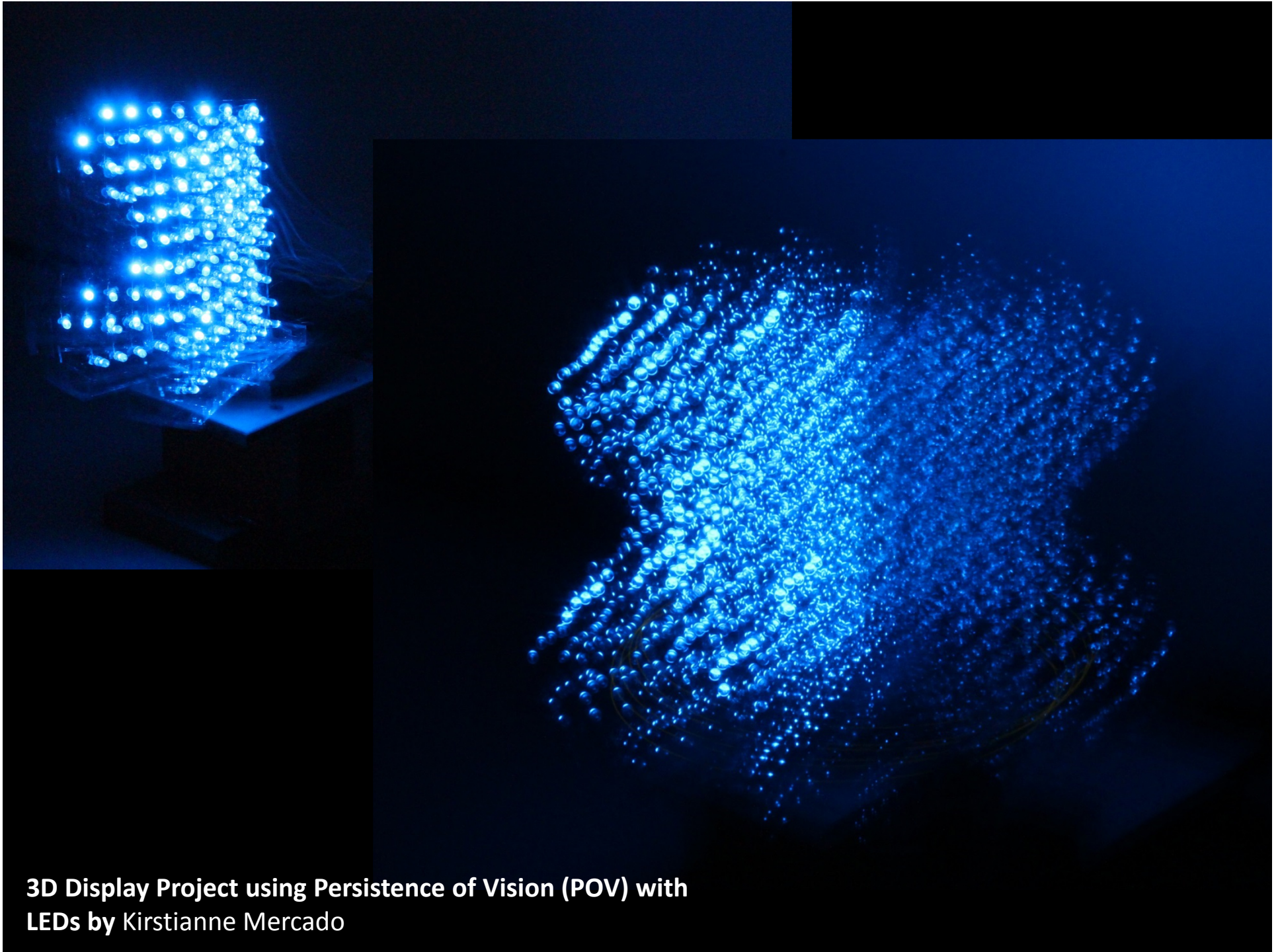




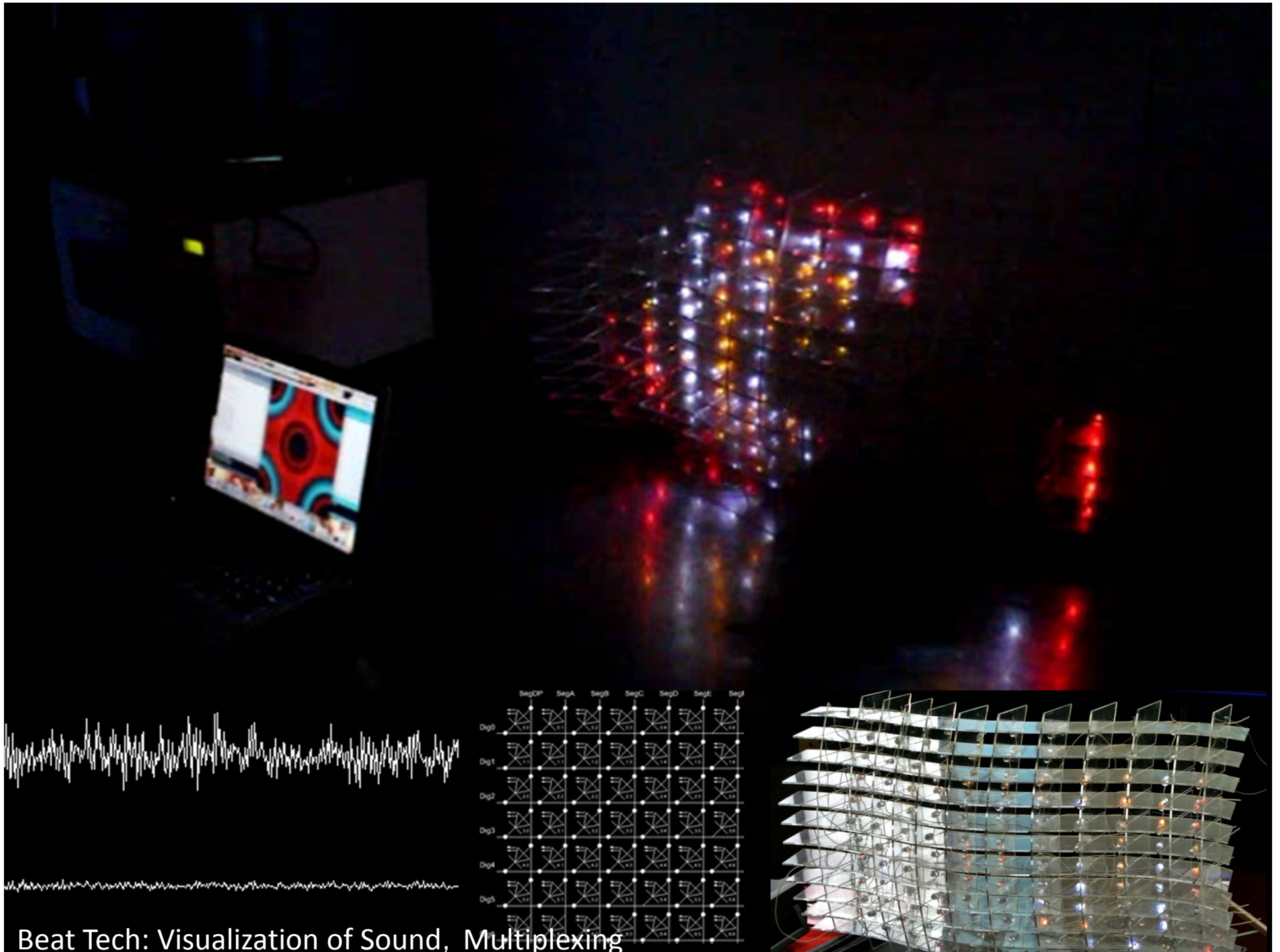




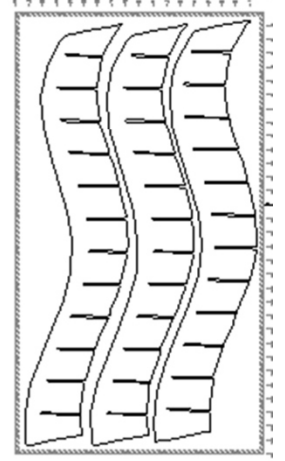
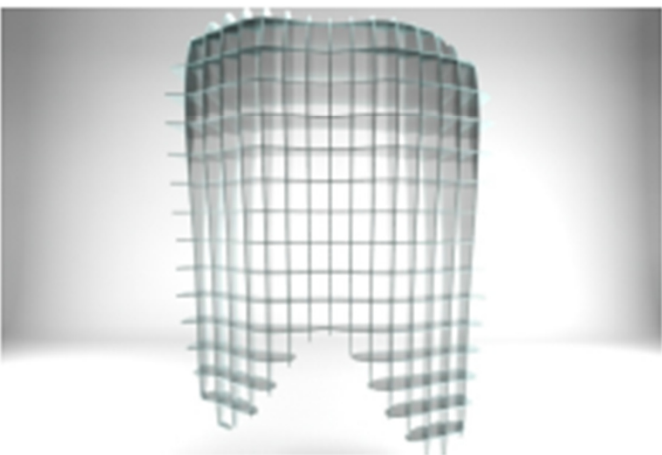
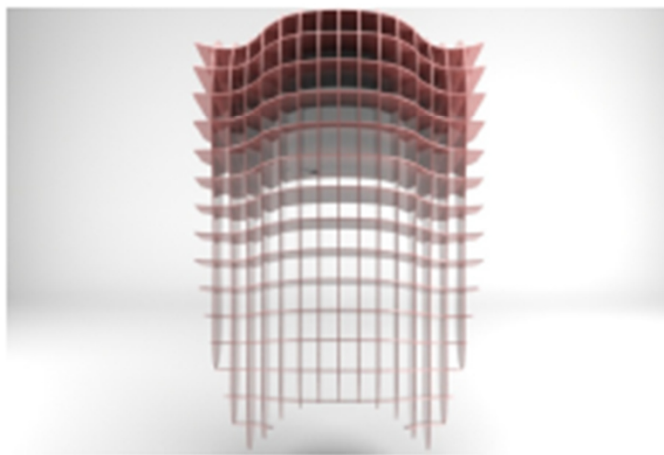
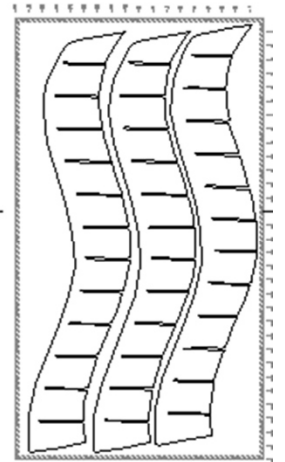
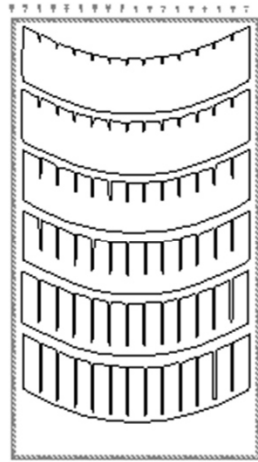
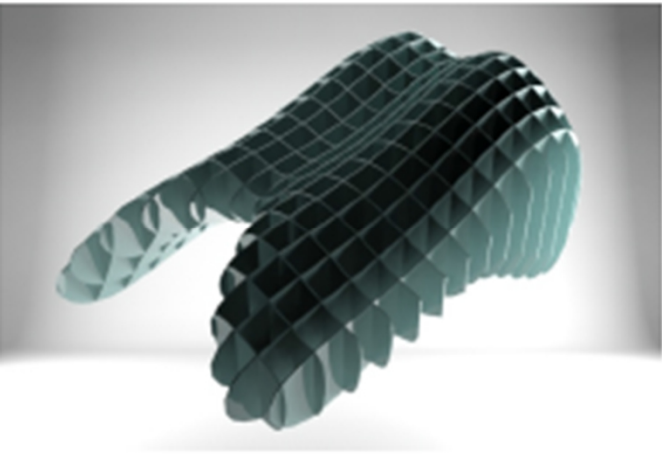
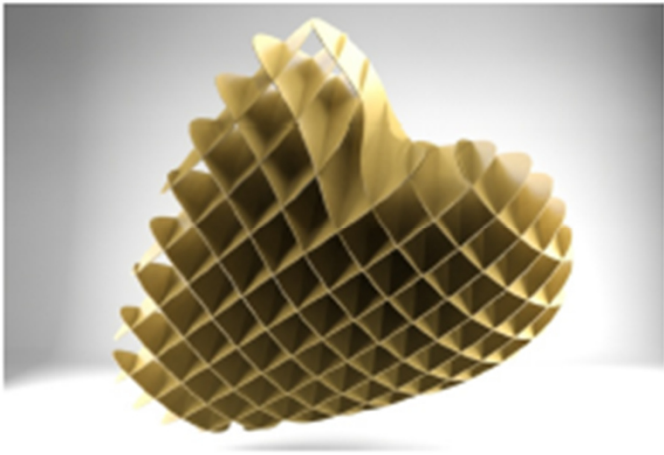
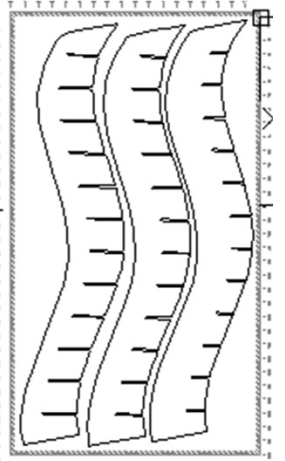
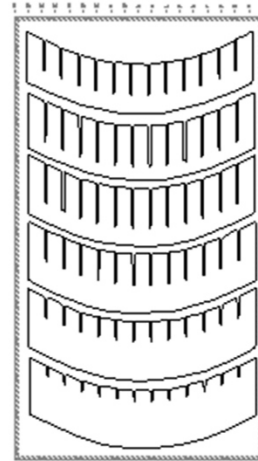
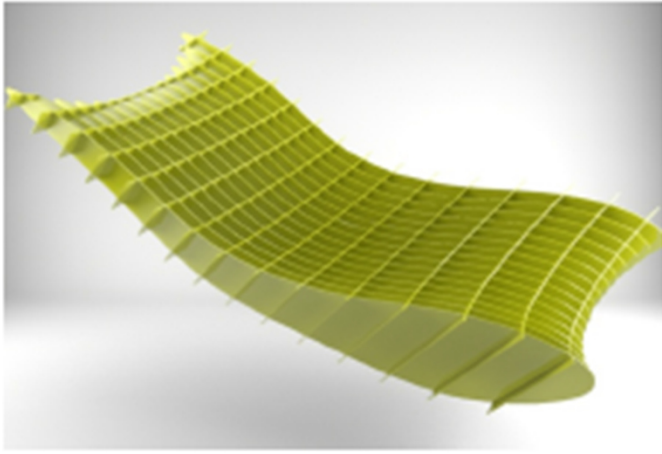
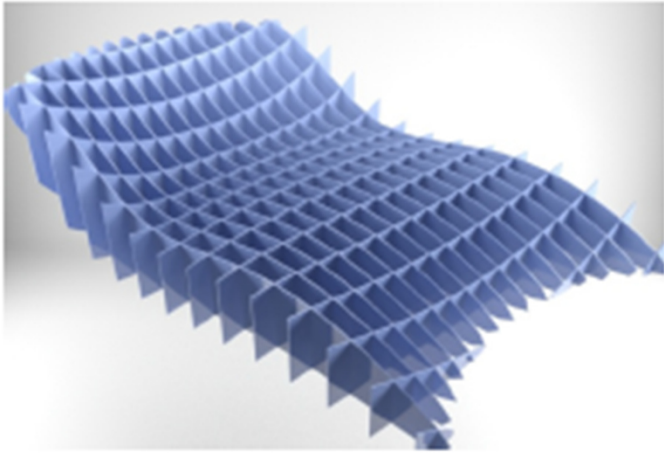
**3D Display Project using Persistence of Vision (POV)  
with LEDs by Kirstianne Mercado**



**3D Display Project using Persistence of Vision (POV) with LEDs by Kirstianne Mercado**



Beat Tech: Visualization of Sound, Multiplexing



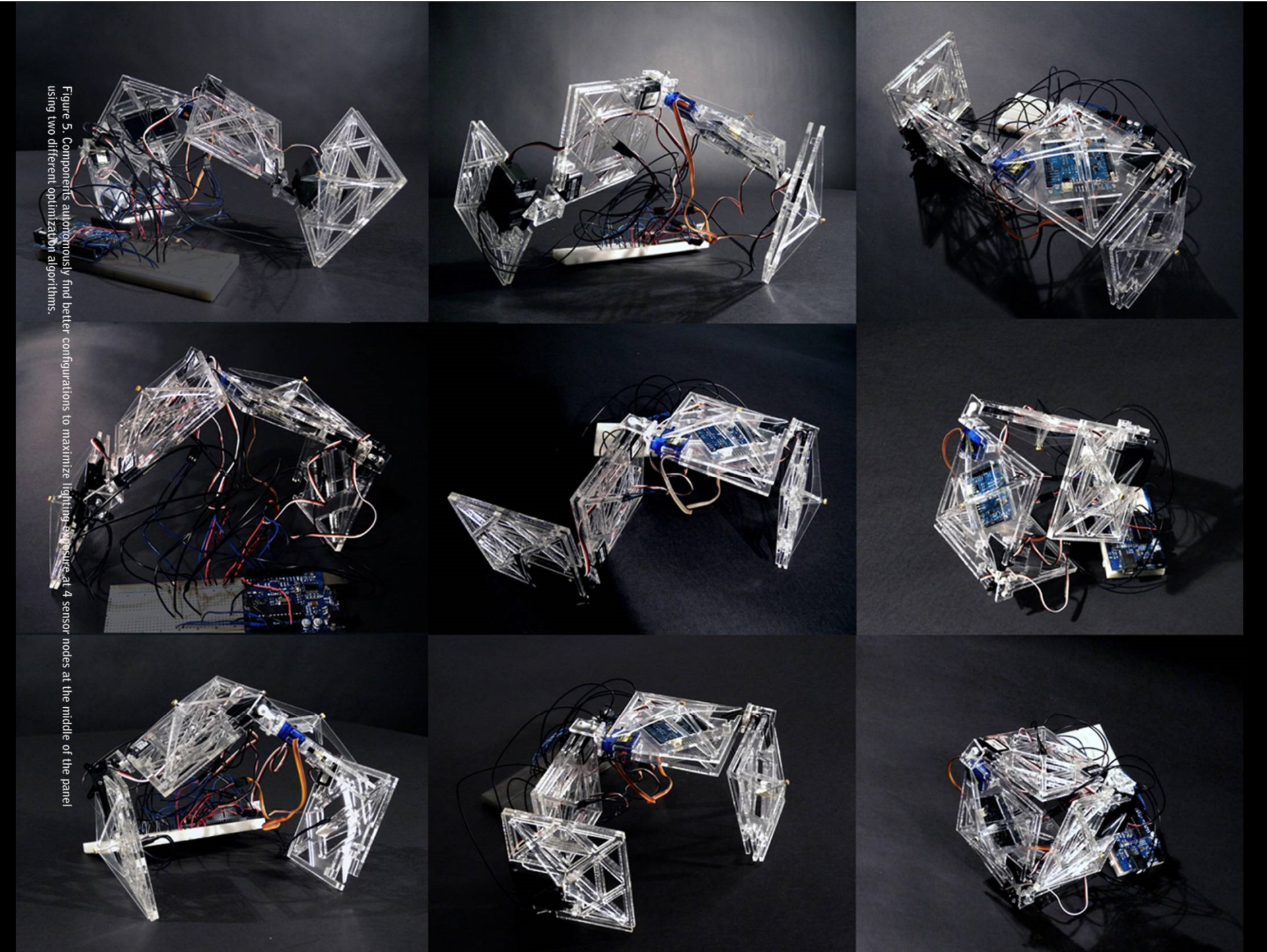
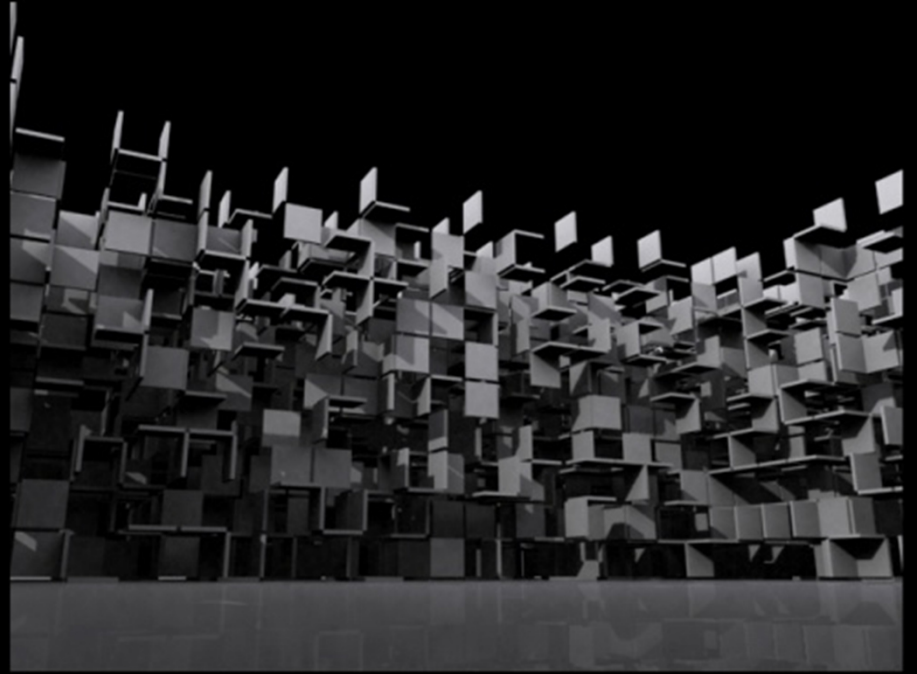
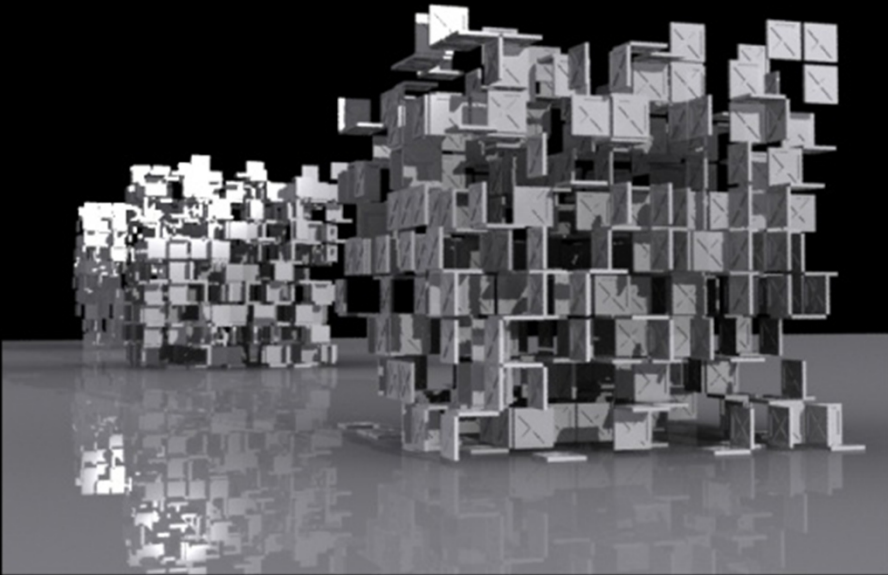
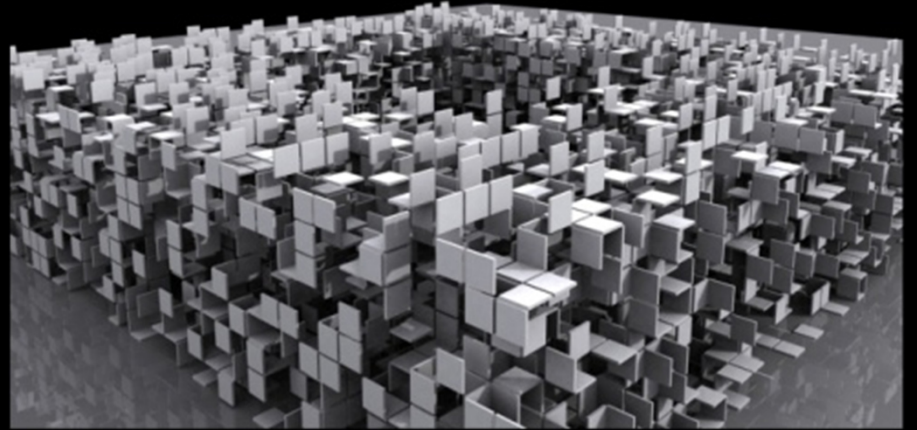
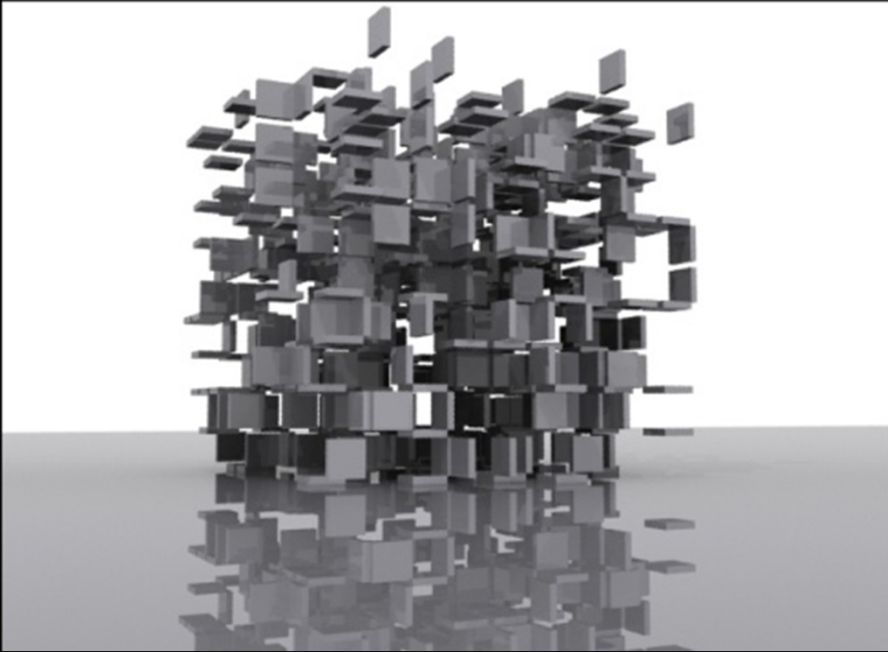
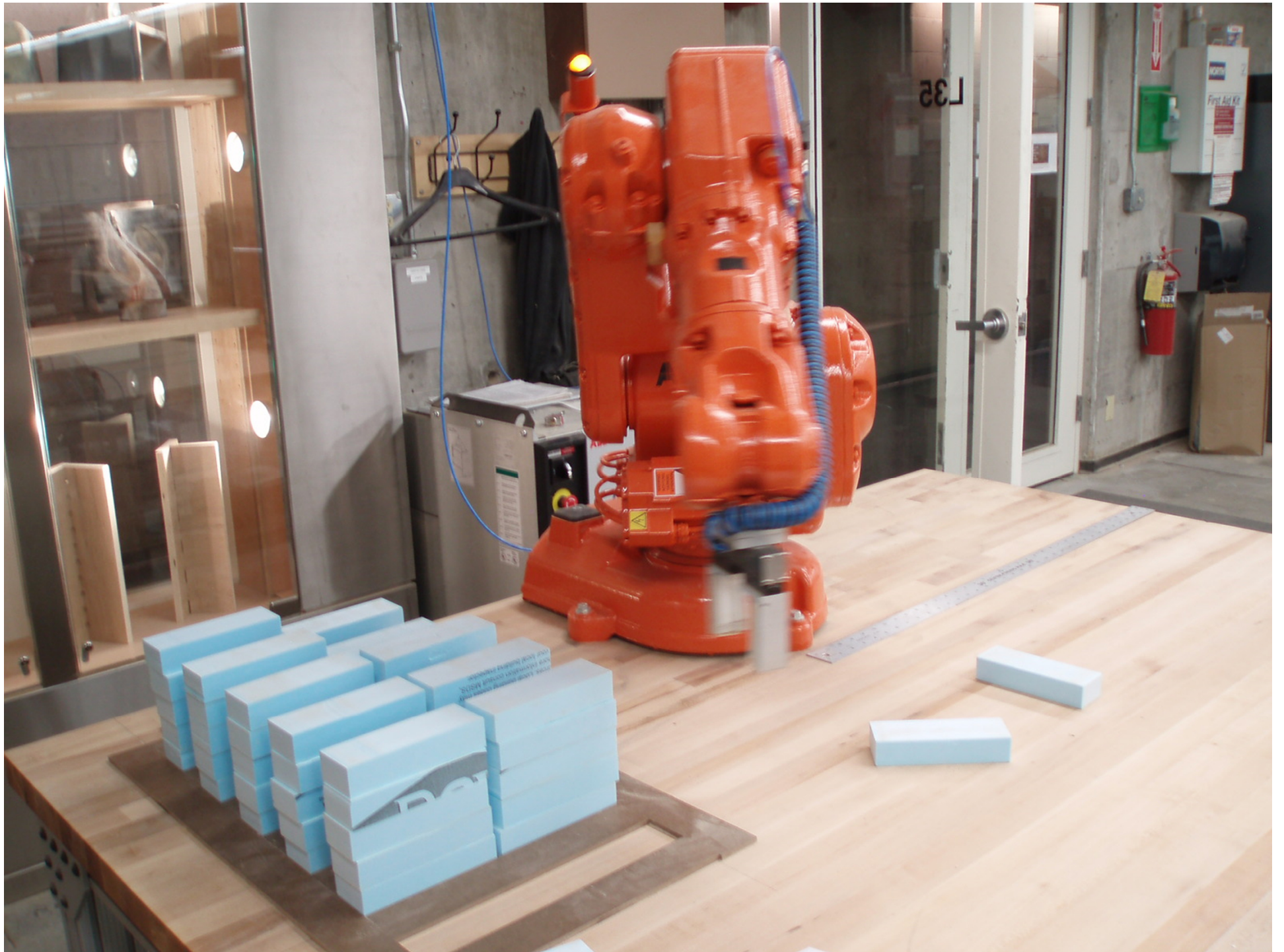
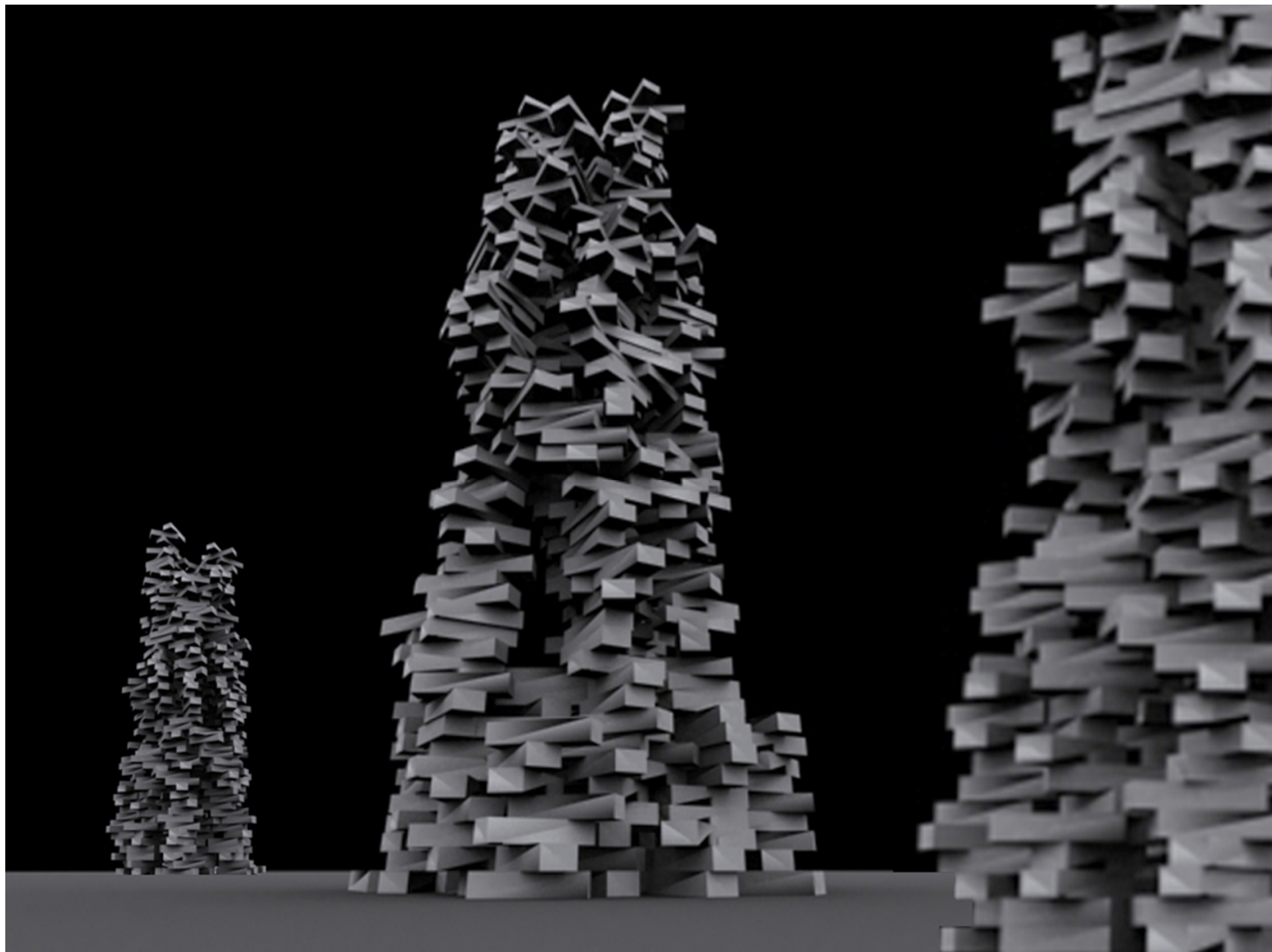


Figure 5. Components autonomously find better configurations to maximize lighting exposure at 4 sensor nodes at the middle of the panel using two different optimization algorithms.





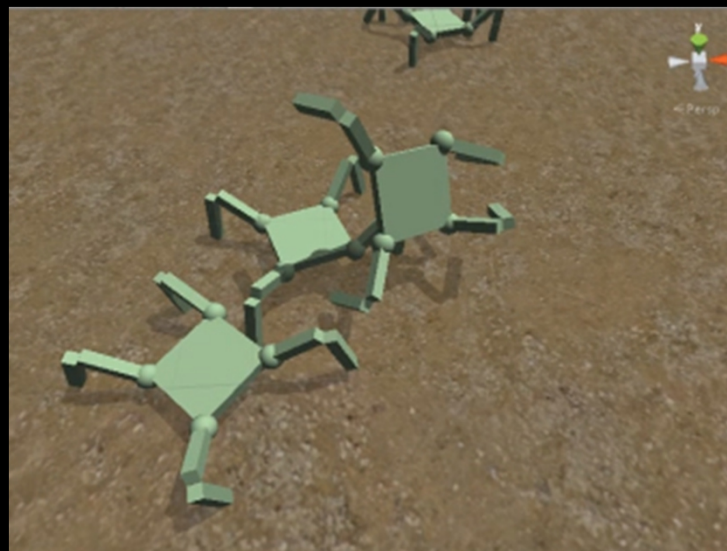
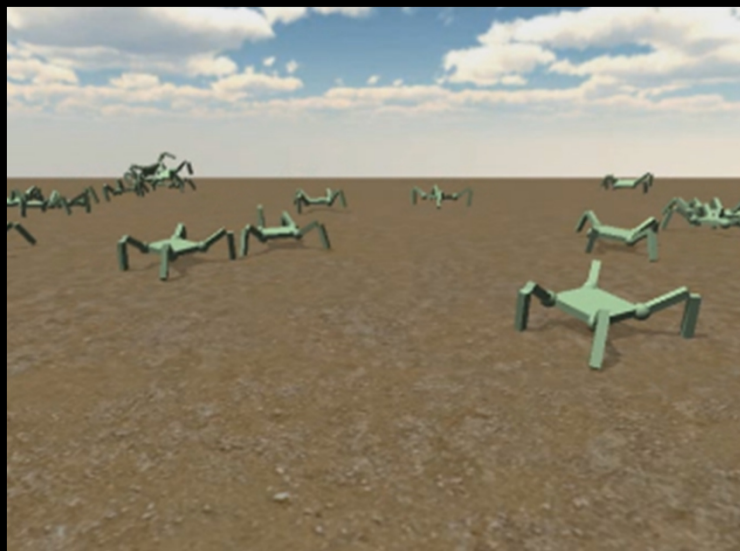
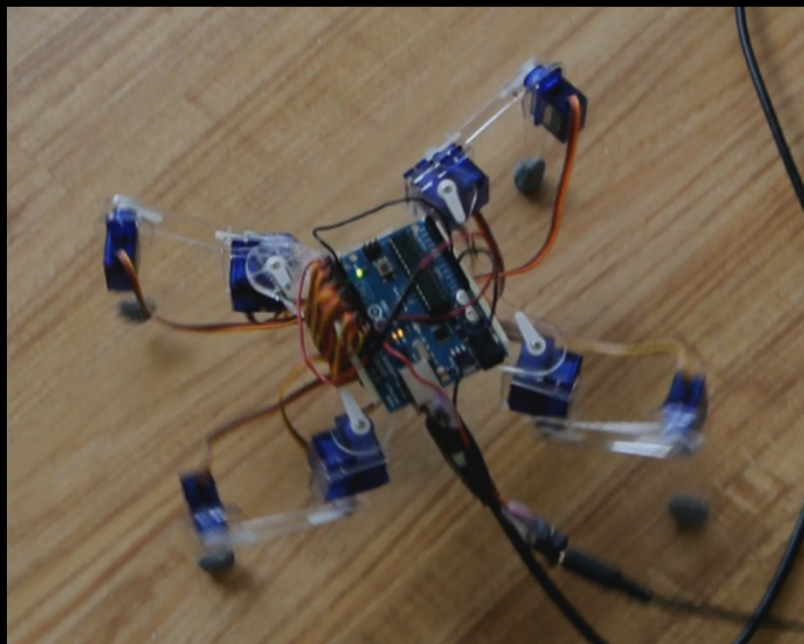






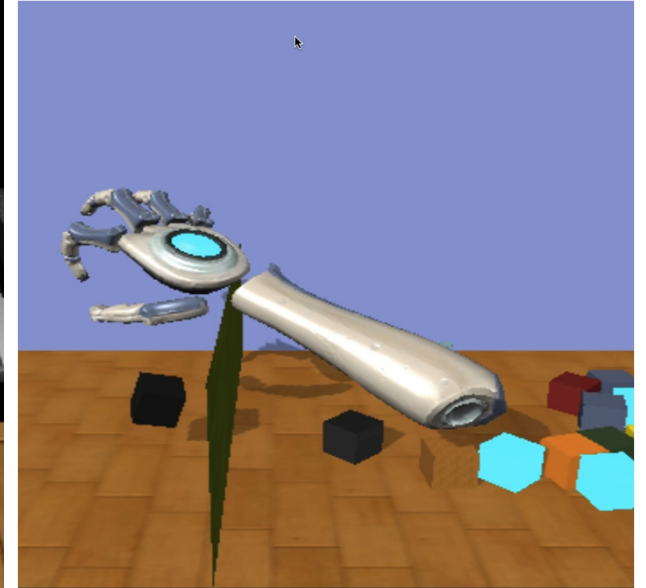
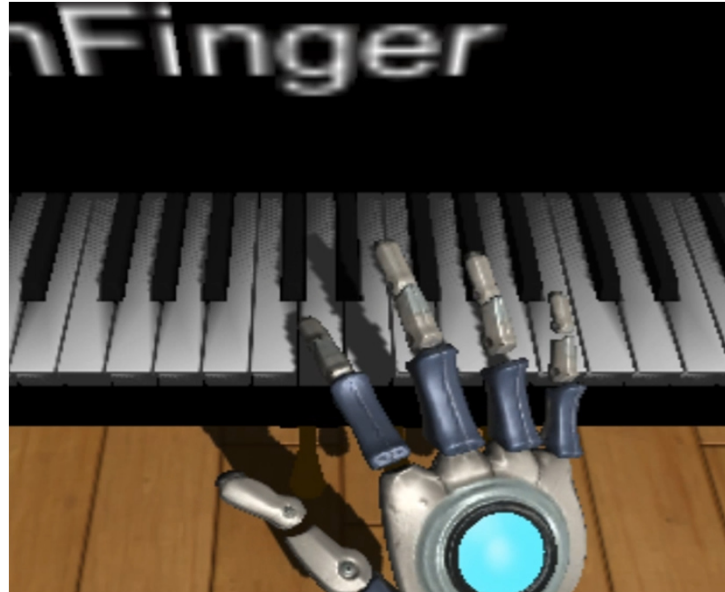
*Inspirations from Natural  
Self-organizing Systems*

# Game Engine (Physics Simulation) + Arduino Microcontroller

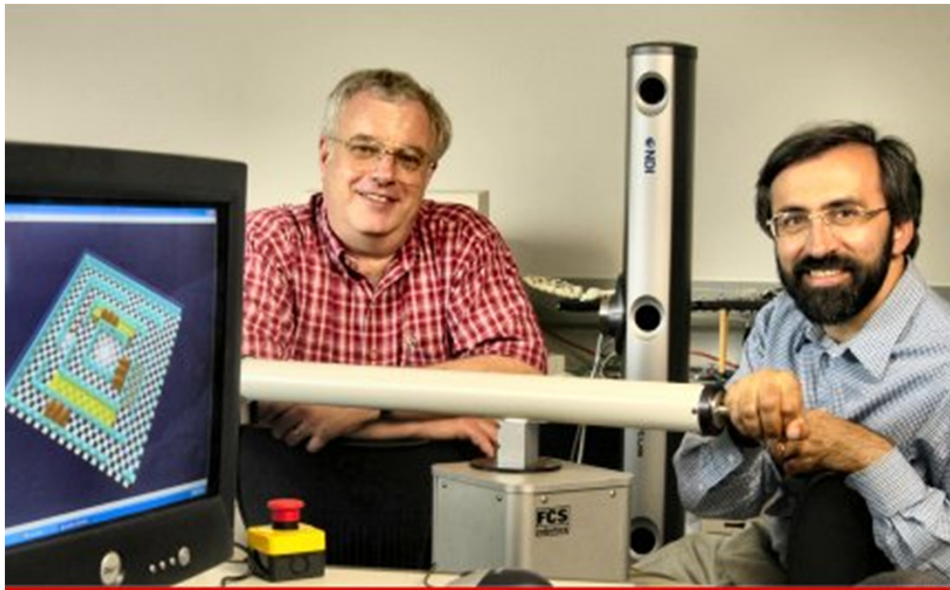


ゲーム開発環境上で 物理シミュレーション ロボティクス技術 リアルタイム連携と応用

# 介護医療ロボット・ゲーム共同研究（VR・ゲーム・ロボット技術の融合）



Dr. Richard Foulds 教授（共同研究者）、NJIT ニュージャージー工科大学、バイオメディカル・エンジニアリング学部

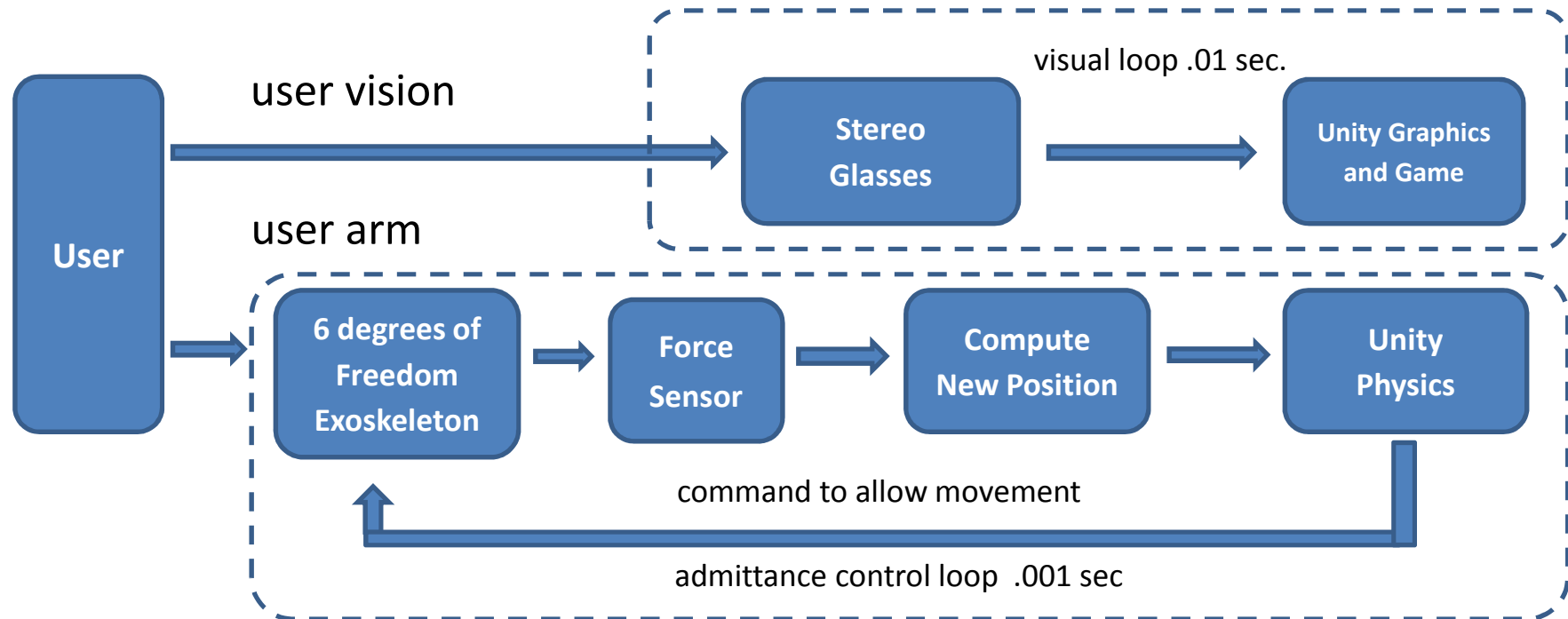


Dr. Sergei Adamovich 教授（共同研究予定者）



NJIT RAVR therapeutic robot system using the 3 degrees of freedom

# 介護医療ロボット・ゲーム共同研究 (VR・ゲーム・ロボット技術の融合)



6自由度のグripper付パワーアシスト機器を物理シミュレーション機能の付いたVR空間上のゲームとハプティクス(触覚技術)を利用して連動する。

Block diagram of the addition of Unity3D as the graphics and physics engine to the BME 6 degree of freedom plus grip exoskeleton

共同研究者:

Dr. Richard Foulds 教授、BME, NJIT、バイオメディカル・エンジニアリング学部、ニュージャージー工科大学

Up and Coming 誌上の連載もどうぞ御一読よろしくお願ひいたします。



## TAROの 海外建築教育レポート

～日本人プロフェッサーが見たアメリカ大学事情～

前回は、榎原氏がMIT長倉威彦準教授を訪ね、その取り組みについて取材し、併せて新しいタイプのコンペ提案「archazar」について紹介しました。  
今回は、イスラエル・テルアビブの大学に招聘され、講演とワークショップを行った同氏の滞在レポートを掲載します。

### ■著者プロフィール

榎原太郎氏は、米国マサチューセッツ工科大学、ハーバード大学で学び、現在はニュージャージー工科大学で教授を執られています。大学教育の現状やコンピュータ、デザインなどの専門分野の動向などを現地からレポートいただく企画です。



Vol. 8

### イスラエル古都巡礼 / ワークショップ

ある日、突然イスラエルから連絡が来た。  
「講演会つきでワークショップを一週間、テル・アビブにある大学でやってみませんか？」  
予想外の唐突な依頼に「不思議」の一字で頭が傾たされた。  
なぜイスラエルなのだろうか？

イスラエルと言えばユダヤ人のヘッドクォーターであり、ユダヤ人と言えば多岐において現代人類最強民族の一つと私は勝手に解釈している。ニューヨークで勤務していた頃、特に建築建築業界でのユダヤ人勢力の存在感は否定しがたいものがあると感じた。実際、超が付く有名建築家にはフランク・ゲーリーをはじめリチャード・マイヤー、ピーター



エルサレム旧市街城壁に隣接したダビデの塔と呼ばれる要塞。

梶原 太郎 (Taro Narahara): [narahara@njit.edu](mailto:narahara@njit.edu)

略歴:

ニュージャージー工科大学 Assistant Professor	2010~
米国建築士(ニューヨーク州登録)	2004~

学歴:

ハーバード大学大学院博士	2010
マサチューセッツ工科大(MIT)理学修士	2007
早稲田大学理工学部数学科	1994

職歴:

Gluckman Mayner Architects	2000-2005
(六本木 森美術館 エントランスパビリオン等の設計担当)	
SOM (NY事務所勤務)	1997-2000