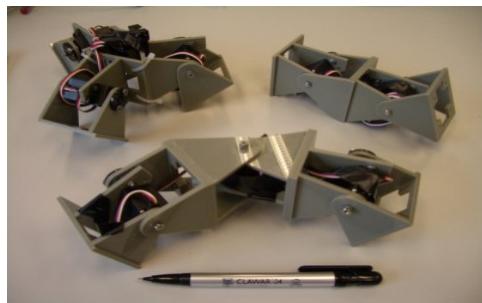
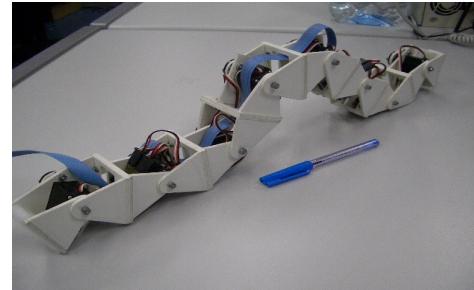
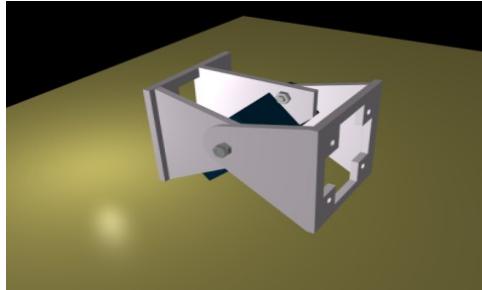


Demostración de robots modulares

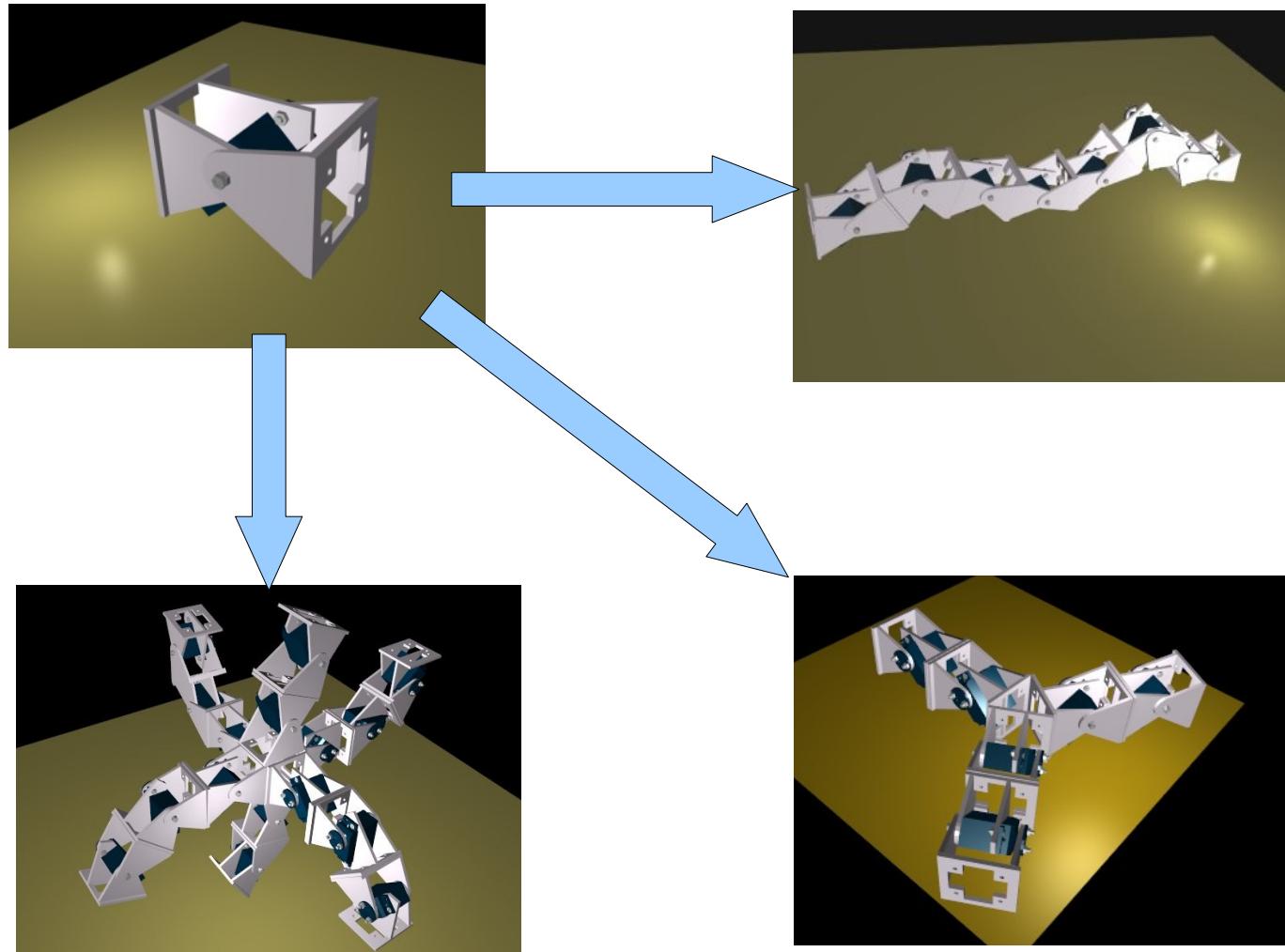


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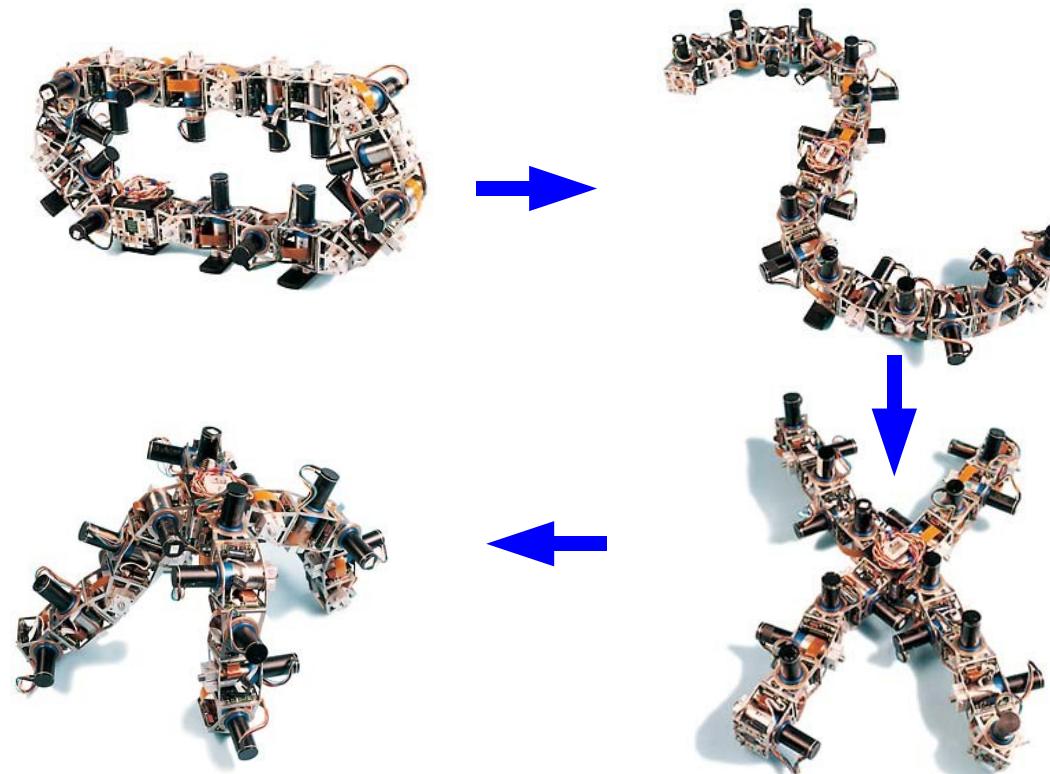
Robótica Modular

- Creación de estructuras robóticas a partir de **módulos** sencillos:

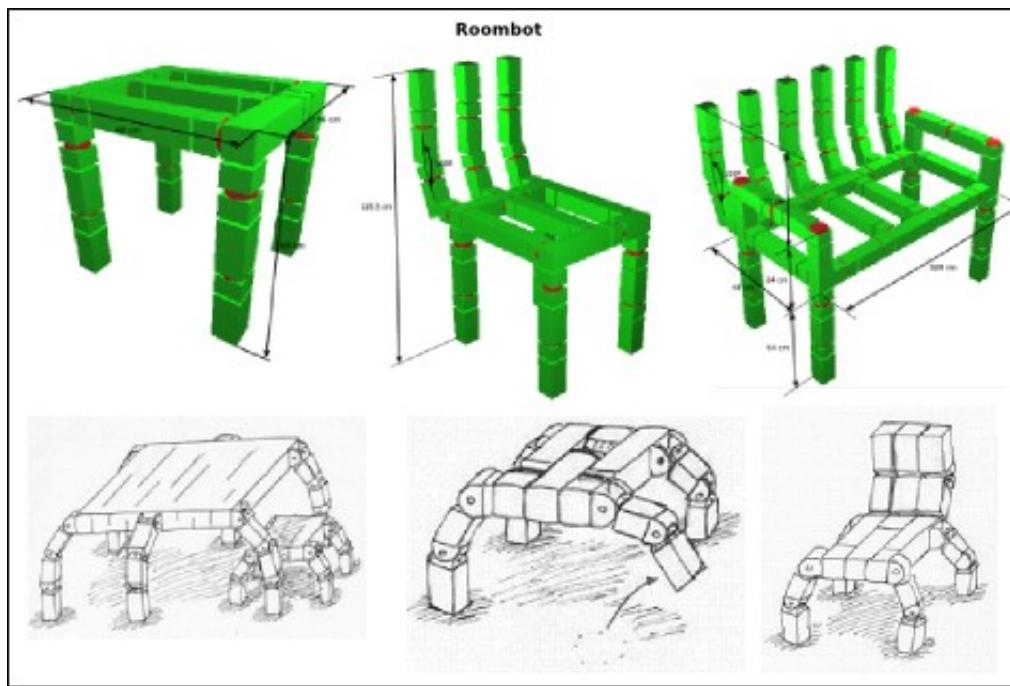


Robótica Modular Auto-configurable

- La robótica modular nació en 1994 con la tesis de Mark Yim
- Propuso la creación de robots modulares auto-configurables
- Primer experimento de auto- configuración (Polybot, 2000):

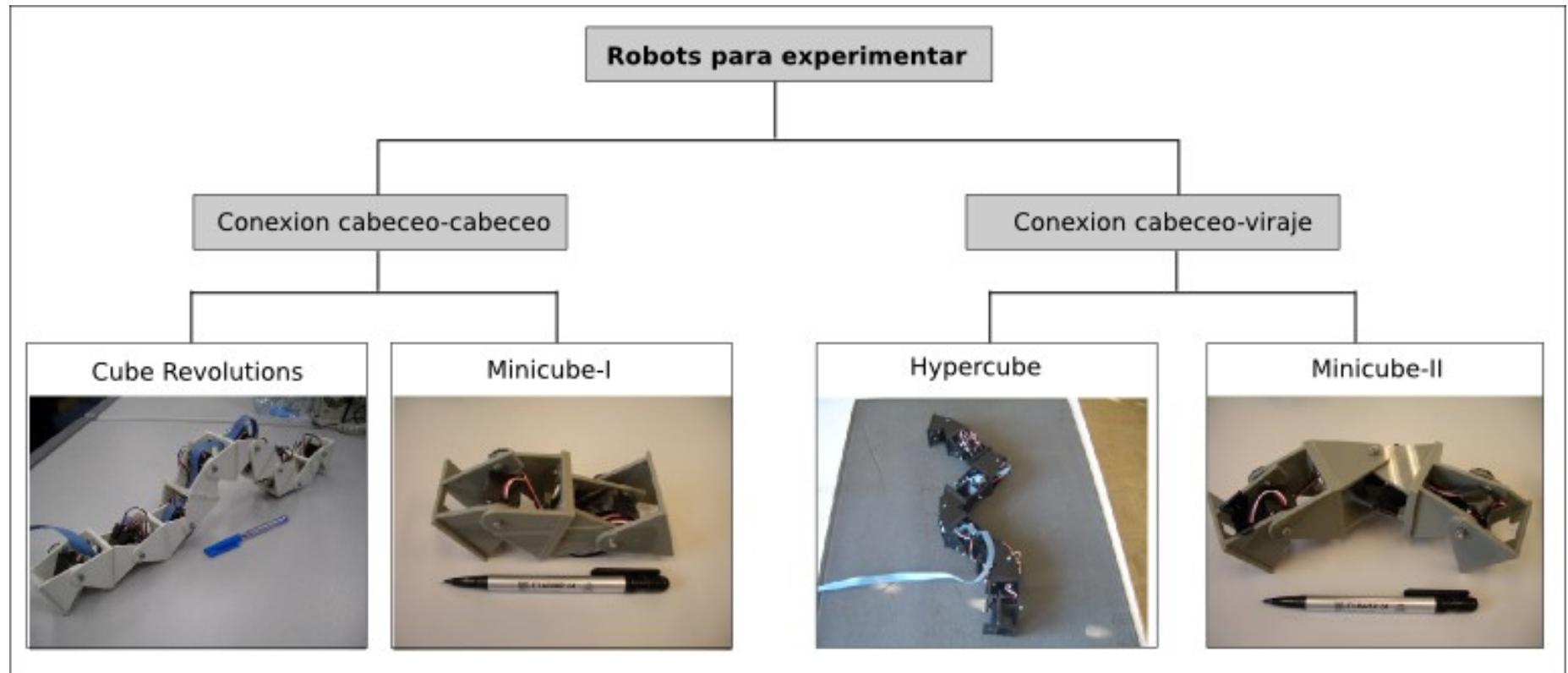


Robots modulares y estructuras



- Construcción de estructuras 3D usando módulos
- Ej. **RoomBot**, (Arredondo *et al.*). Laboratorio de Robótica Bioinspirada. EPFL
- Muebles re-configurables que se pueden mover :-)

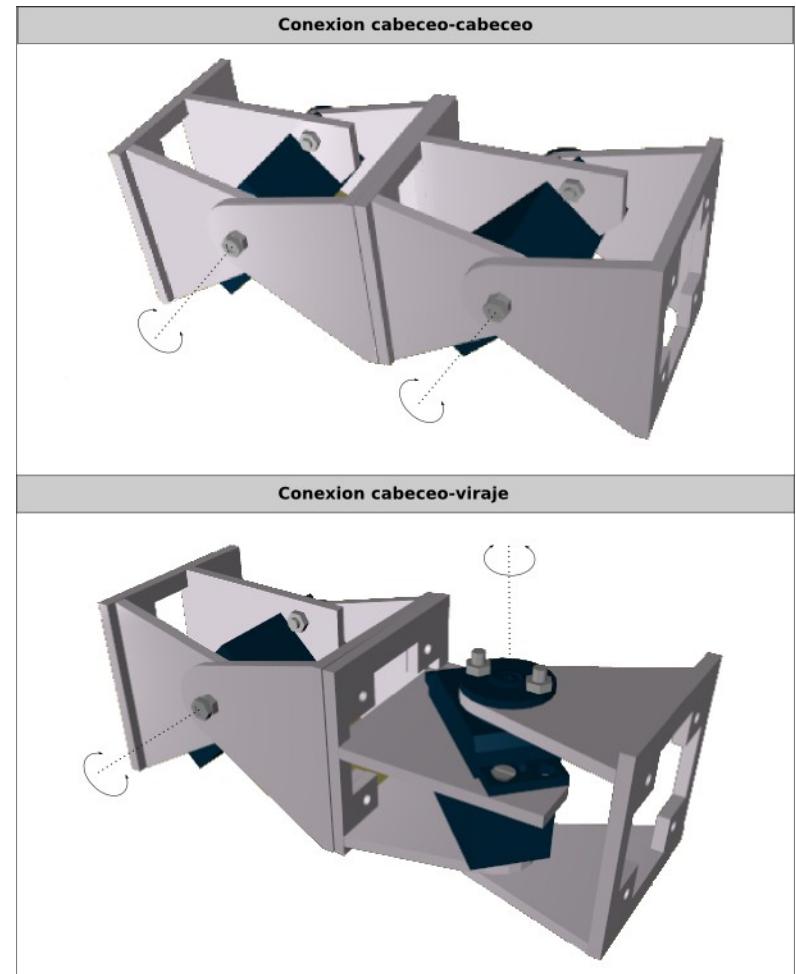
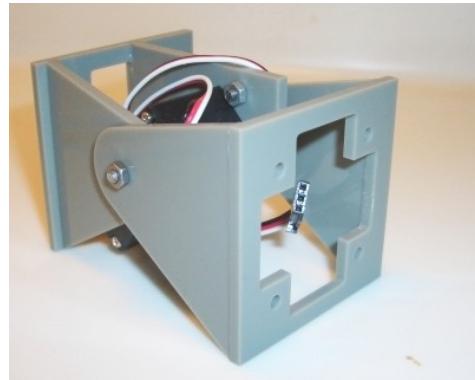
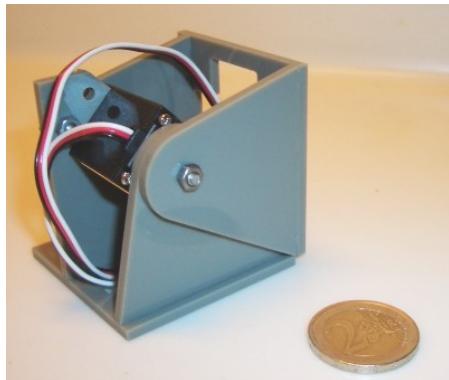
Robótica modular en la Universidad Autónoma de Madrid



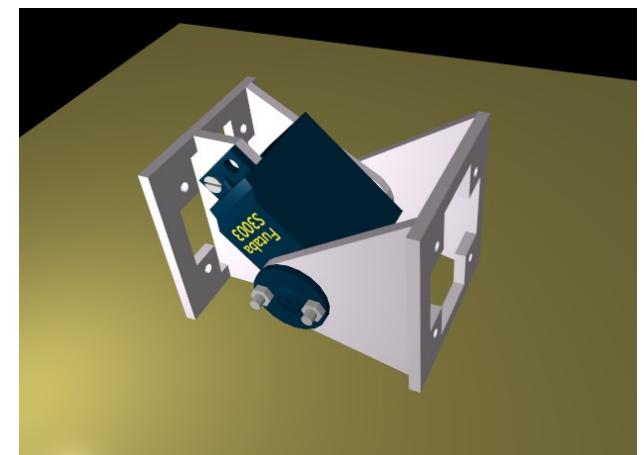
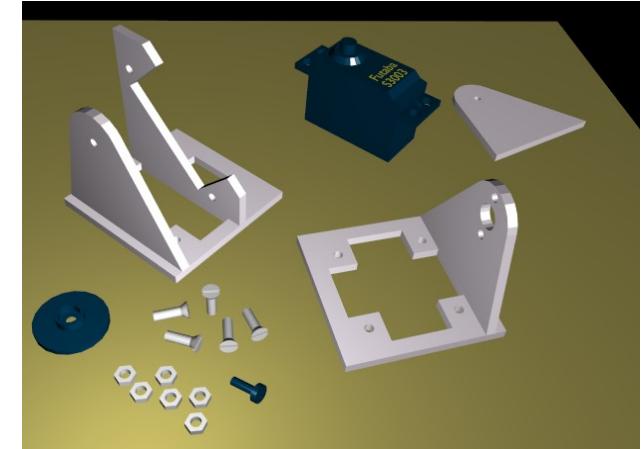
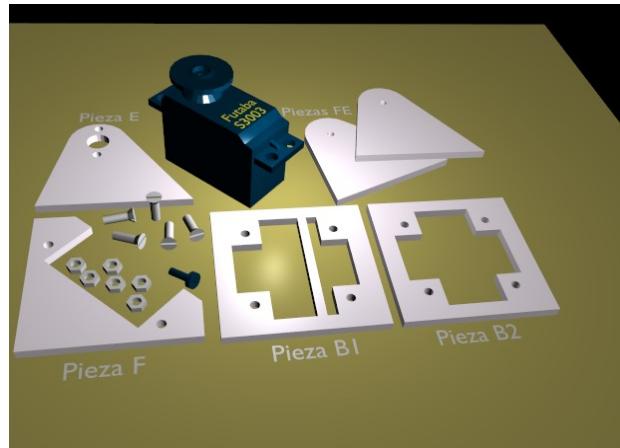
Módulos Y1

Vídeo

- Un grado de libertad
- Fácil construcción
- **Servo:** Futaba 3003
- **Material:** Plástico de 3mm
- **Dimensiones:** 52x52x72mm
- Dos tipos de conexiones



Montaje de los módulos

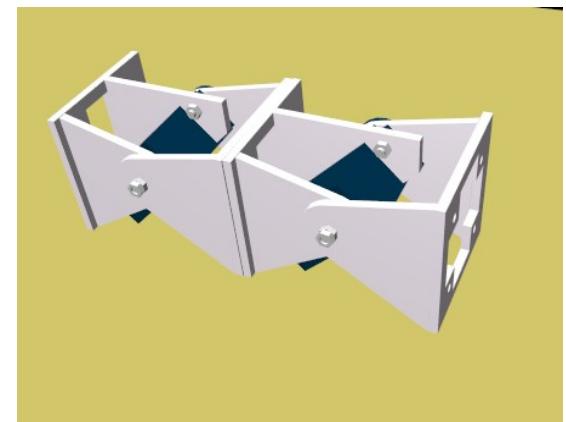
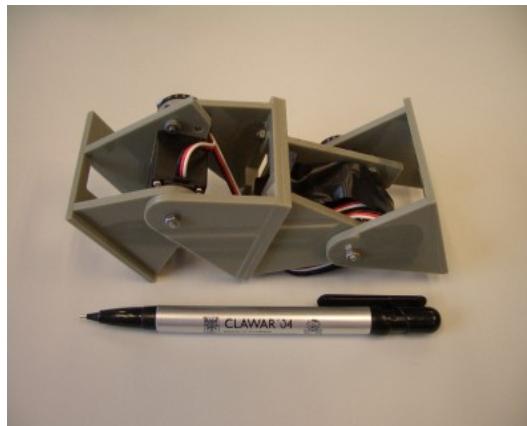


Minicube-I

Demostración

- **Morfología:**

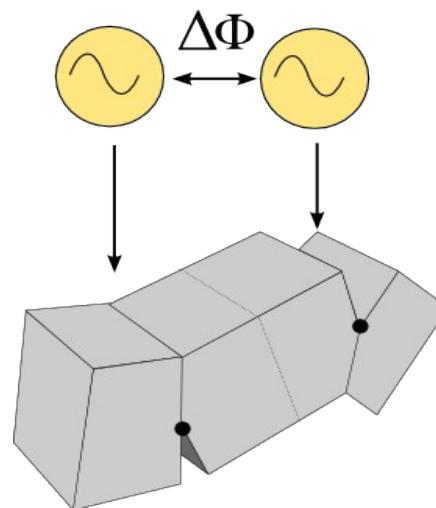
Dos módulos con conexión cabeceo-cabeceo



- **Control:**

- Dos generadores sinusoidales
- Parámetros:

$$A, \Delta\Phi, T$$

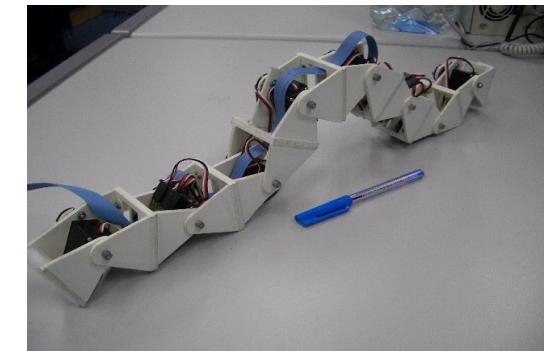
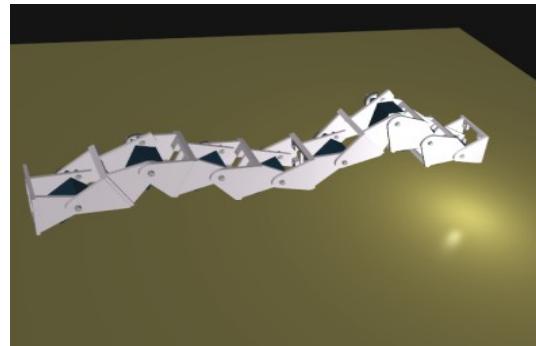


Cube Revolutions (I)

Vídeo

- **Morfología:**

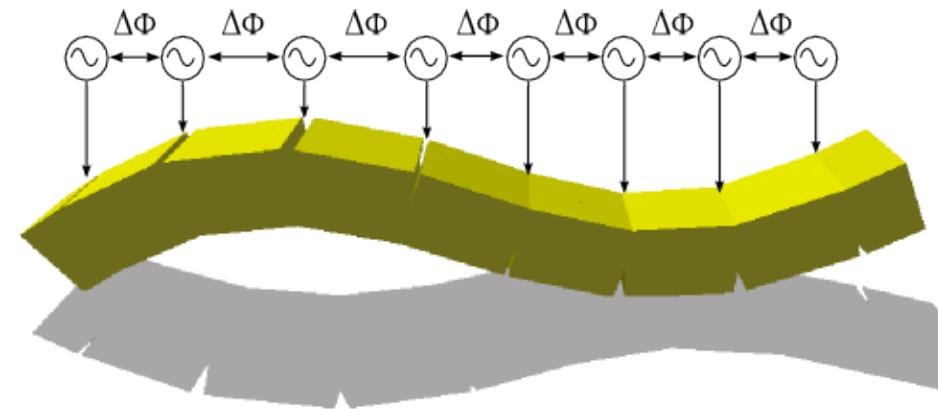
8 módulos con conexión
cabeceo-cabeceo



- **Control:**

- 8 generadores iguales
- Parámetros:

$$A, \Delta\Phi, T$$

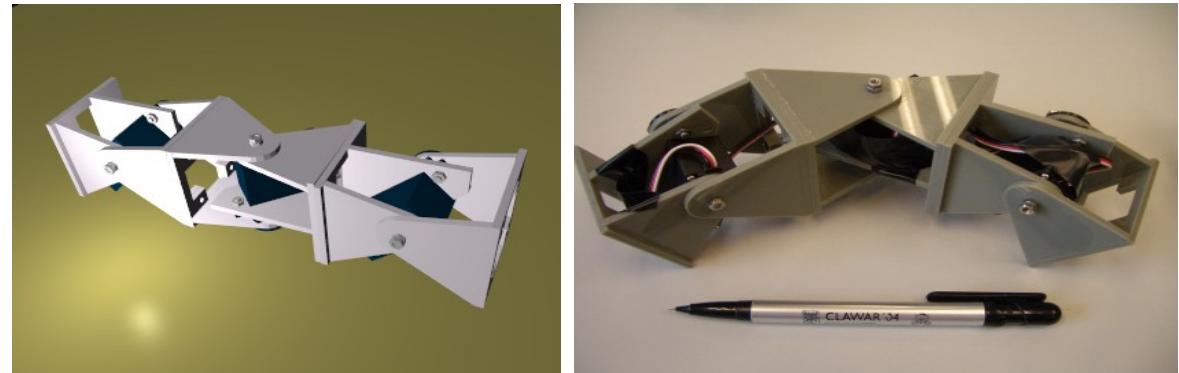


Minicube-II

Demostración

- **Morfología:**

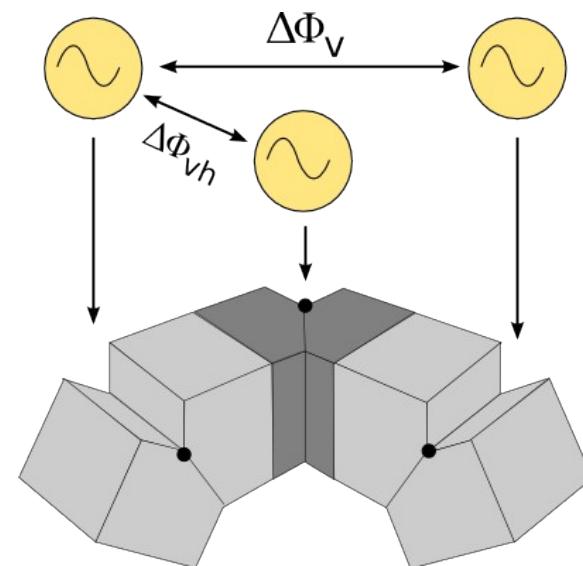
Tres módulos con conexión cabeceo-viraje



- **Control:**

- Tres generadores sinusoidales
- Parámetros:

$$A_v, A_h, \Delta\Phi_v, \Delta\Phi_{vh}, T$$

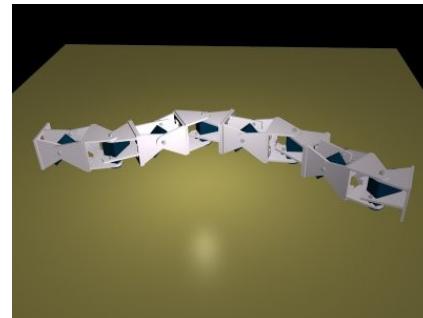


Hypercube (I)

Demostración

- **Morfología:**

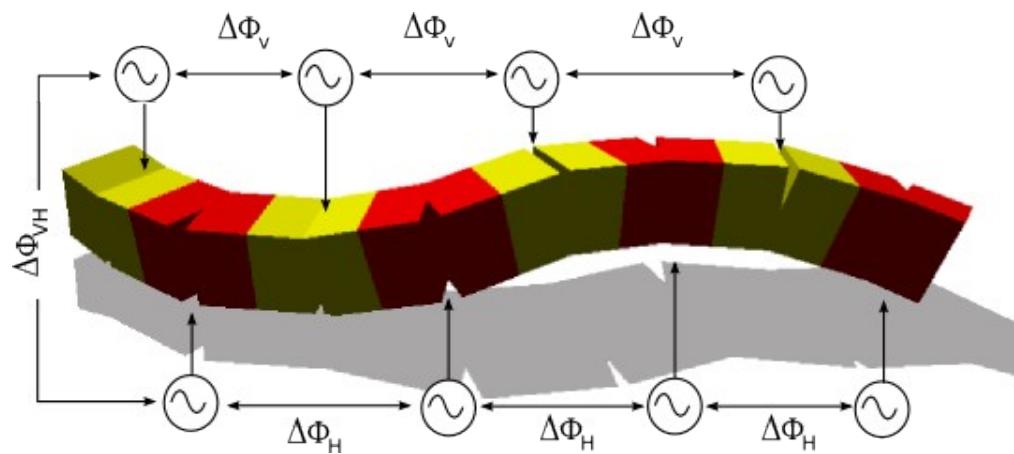
8 módulos con conexión
cabeceo-viraje



- **Control:**

- 8 generadores iguales
- Parámetros:

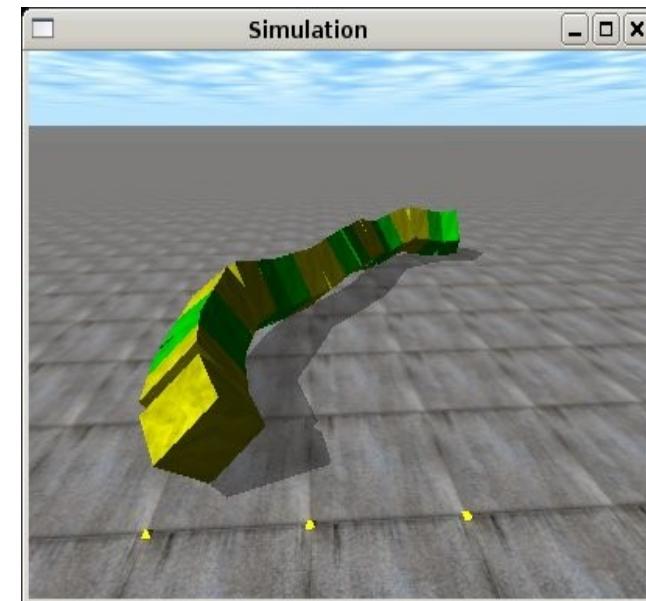
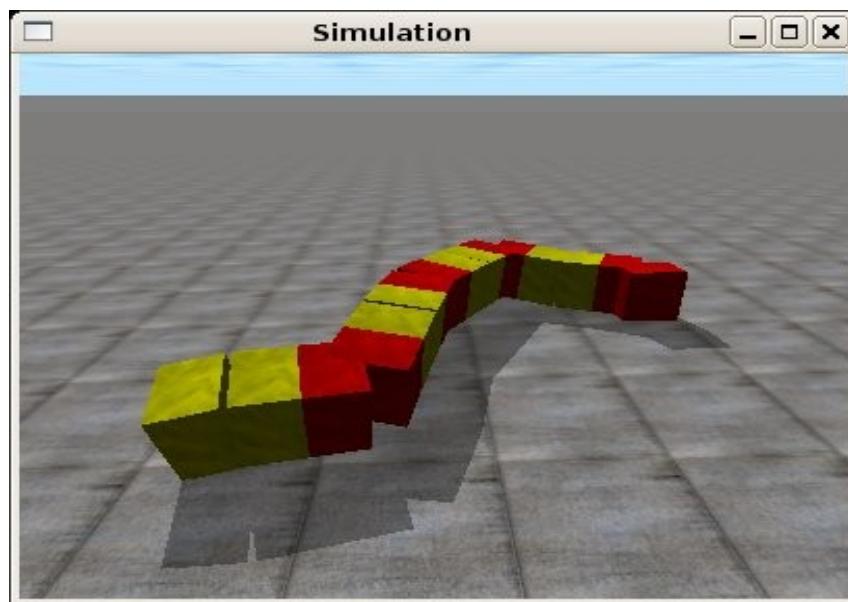
$$A_h, A_v, \Delta\Phi_h, \Delta\Phi_v, \Delta\Phi_{vh}, T$$



Simulación

Demostración

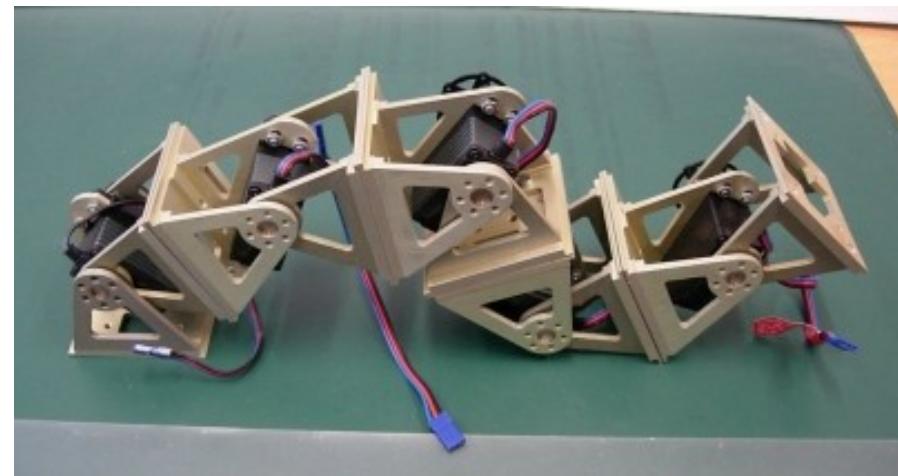
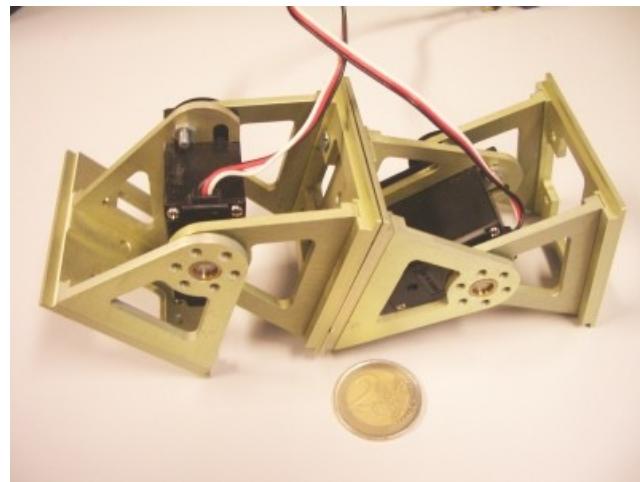
- Simulaciones de los robots en el PC para:
 - Realizar mediciones
 - Experimentar con robots de mayor número de módulos



Módulos GZ-I

Vídeo

- Electrónica integrada en los módulos
- Hechos de aluminio
- Construcción de diferentes topologías de robots modulares



Nuevos interfaces con los robots

Y un poco de **robótica friki** para terminar
:-)

Wiimote



Wiiboard



Tarri-wheel



Que el “frikismo” os acompañe...

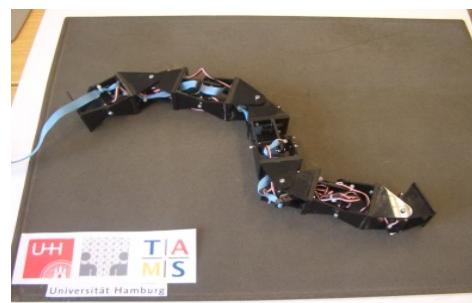
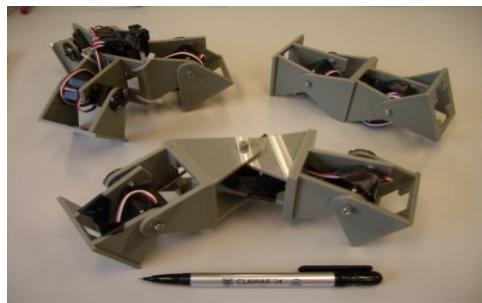
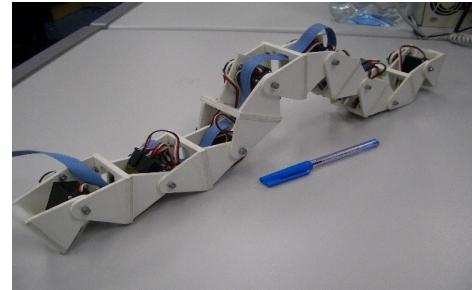
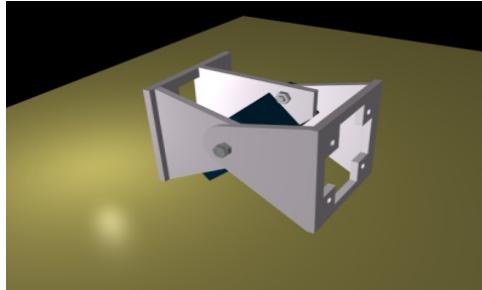


Dr. Obijuan

Muchas gracias por vuestra atención

:-)

Demostración de robots modulares



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