

Hop, Lean, Balance, & Spin: New modes of locomotion for small agile robots

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FIGURES.

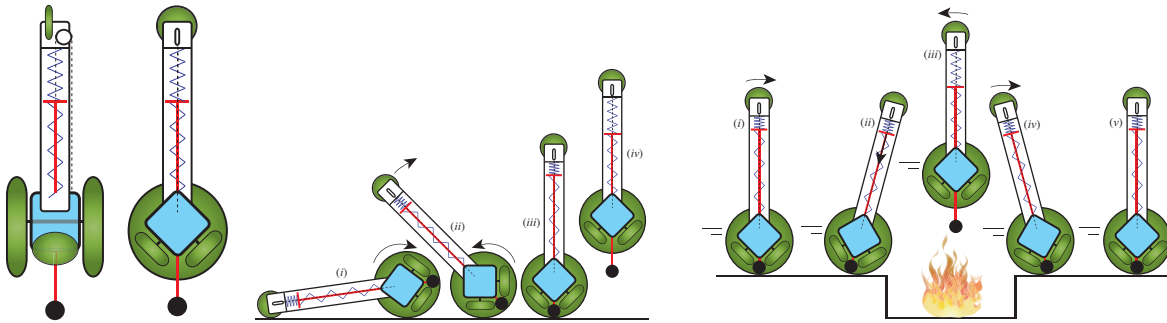


Figure 1. Cartoons illustrating the multimodal hopping robot concept.

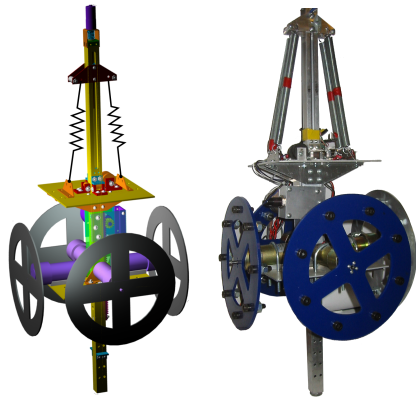


Figure 2. The iHop v.1 design and prototype.

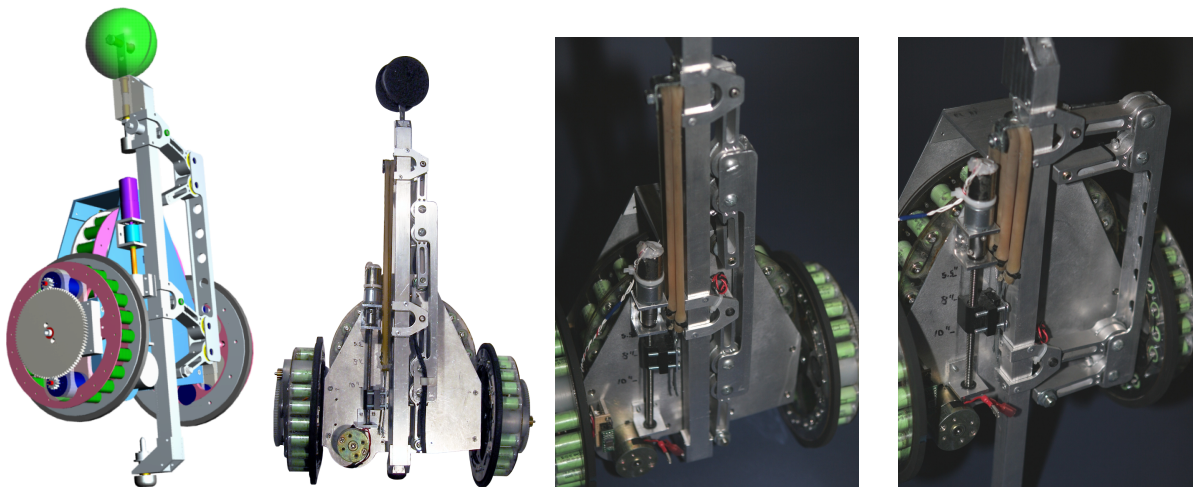


Figure 3. The iHop v.2 design and prototype, and a close-up of its self-locking four-bar linkage mechanism, with the leg in its retracted and extended states. Note also the (heavy) central reaction wheel.

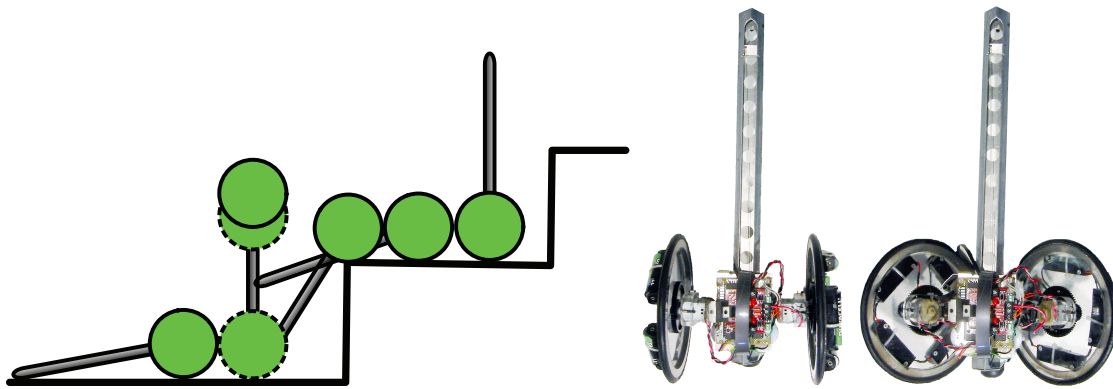


Figure 4. The iLean concept and prototype, illustrated in both the wheels-parallel and the wheels-canted configurations.

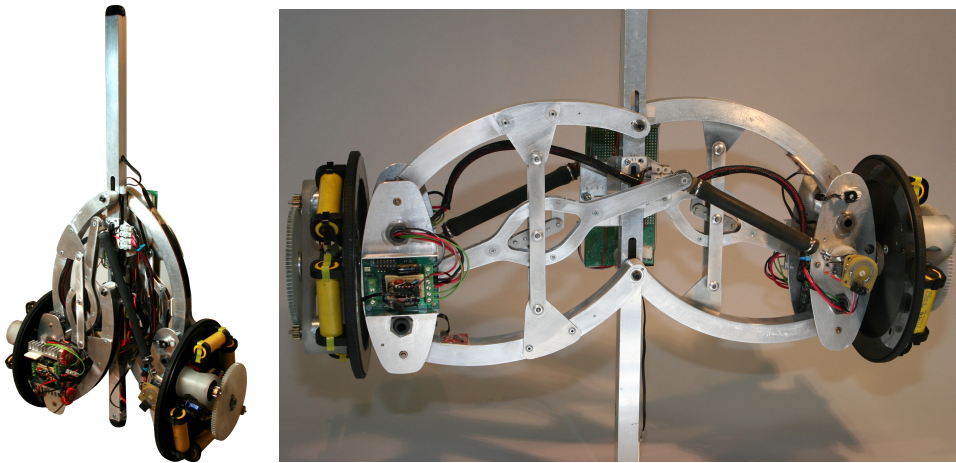


Figure 5. The iHop v.3 prototype. Note the remarkable new linkage mechanism.

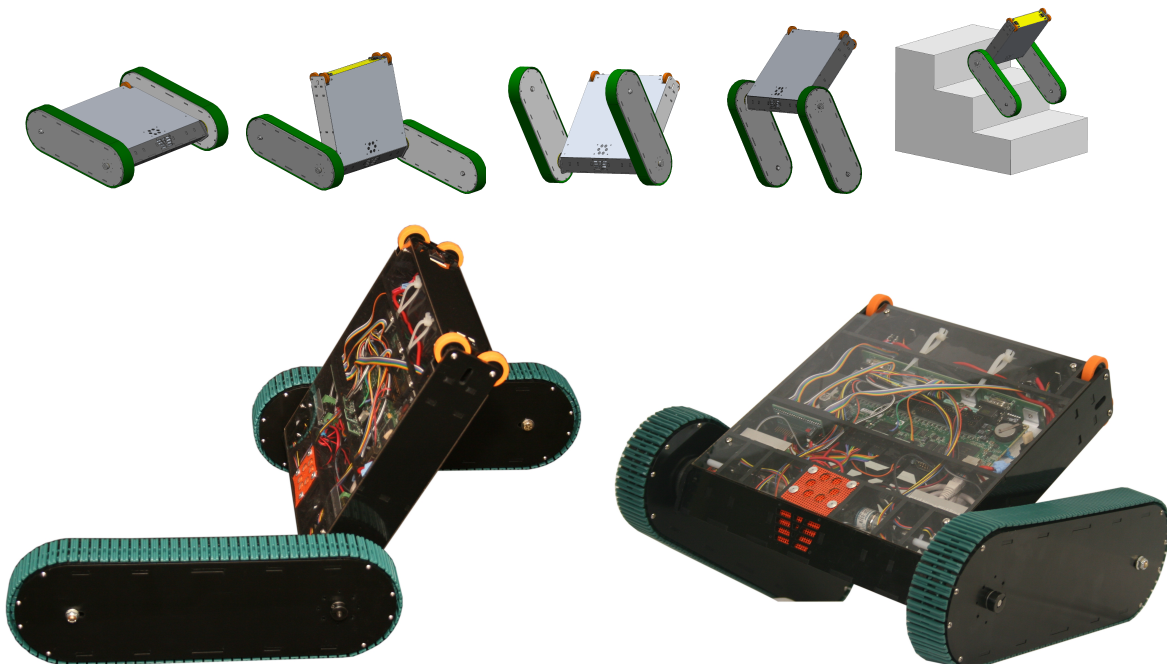


Figure 6. The multimodal Switchblade design and prototype.

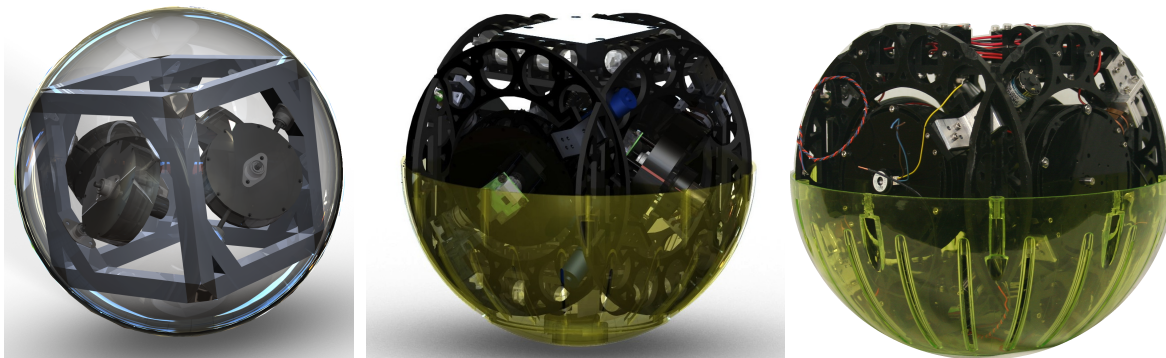


Figure 7. The iceCube concept (left), completed CAD design (center, with the top hemisphere removed for clarity), and prototype (right). The hundreds of complex pieces that comprise iceCube fit together with extremely tight clearances; its design would have been impossible without an accurate CAD model.

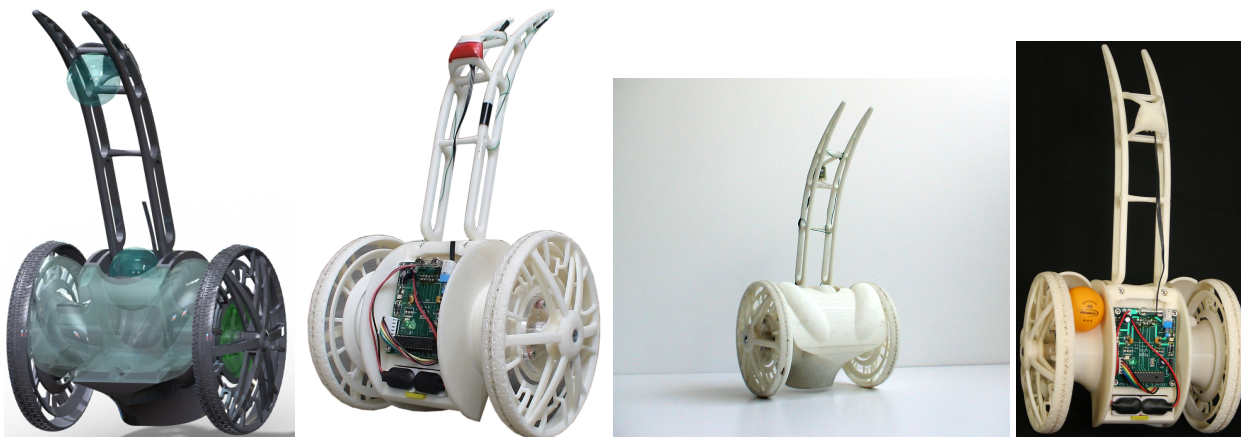


Figure 8. The iFling design and prototype.

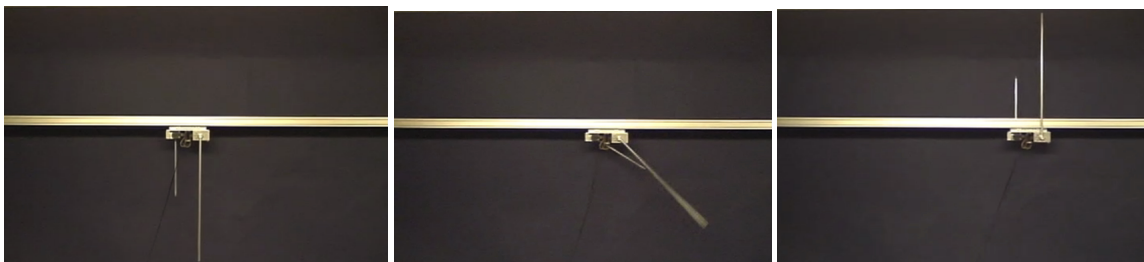


Figure 9. The reference double inverted pendulum swing-up and stabilization problem.