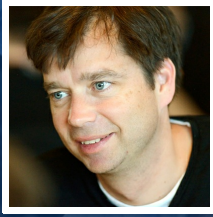


# Unlocking the Secrets of Complex Motor Learning



Bence Ölveczky

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## CURRENT RESEARCH

### Understanding how the brain generates motor skills

If you have seen Cirque du Soleil perform you were probably awed by the high-flying acrobatic displays and death-defying stunts. The exquisitely precise movement sequences executed by the trapeze artists, jugglers, and contortionists serve as beautiful reminders of our brain's remarkable ability to control our bodies. Our own daily 'circus acts' - signing our names, buttoning our shirts, or brushing our teeth - are comparable marvels of precision, robustness, and reproducibility. While the acts may differ in difficulty and splendor, the learning process underlying them is similar. But what exactly is this process, and how is it implemented in our brains? Which neural pathways are engaged as we learn to play a piano sonata, recite a poem, or swing a golf club, and what are their respective functions? How are learned motor sequences, trivial or tremendous, stored in the brain? And how are they recalled and executed?

Despite the ubiquity and overwhelming importance of learned motor behaviors to our daily lives, our understanding of how the brain acquires and controls them remains poor. Not only is this a fundamental question in neuroscience, it is a pressing practical one: developmental disorders, diseases, and strokes compromise the brain's ability to acquire new skills and execute already learned ones, devastating the lives of those affected. Our ability to help them, through better therapeutics and rehabilitation programs, is contingent on better understanding the neural mechanisms involved in the acquisition and execution of complex motor behaviors.

Dr. Bence Ölveczky, Associate Professor of the Natural Sciences at Harvard University, has devoted himself to answering these questions, using both...

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## AFFILIATION



Harvard University

## EDUCATION

- Ph.D., in Neuroscience and Program in Medical Engineering and Medical Physics , Harvard and MIT , 1998 - 2003
- M.S., in Biomedical Engineering , Imperial College , 1995 - 1996
- M.S., in Mechanical Engineering , Technical University of Budapest , 1988 - 1994

## AWARDS

- Helen Hay Whitney Post-Doctoral Fellow (declined)
- Junior Fellow in the Harvard Society of Fellows
- McKnight Scholar
- Klingenstein Fellow
- Sloan Fellow

## RESEARCH AREAS

Life Science, Musculoskeletal, Neurological / Cognitive, Veteran's Causes

## FUNDING REQUEST

Your contributions will support the continued research of Dr. Bence Ölveczky, of Harvard University, as he seeks to understand how the brain learns new motor skills. Donations will fund the necessary \$50K/year to support the salary of each personnel member. Additional donations will cover the \$200K/year that is required for reagents, animals, and for updating and improving experimental infrastructure. Join in understanding the connection between the brain and movement; support Dr. Ölveczky's research.