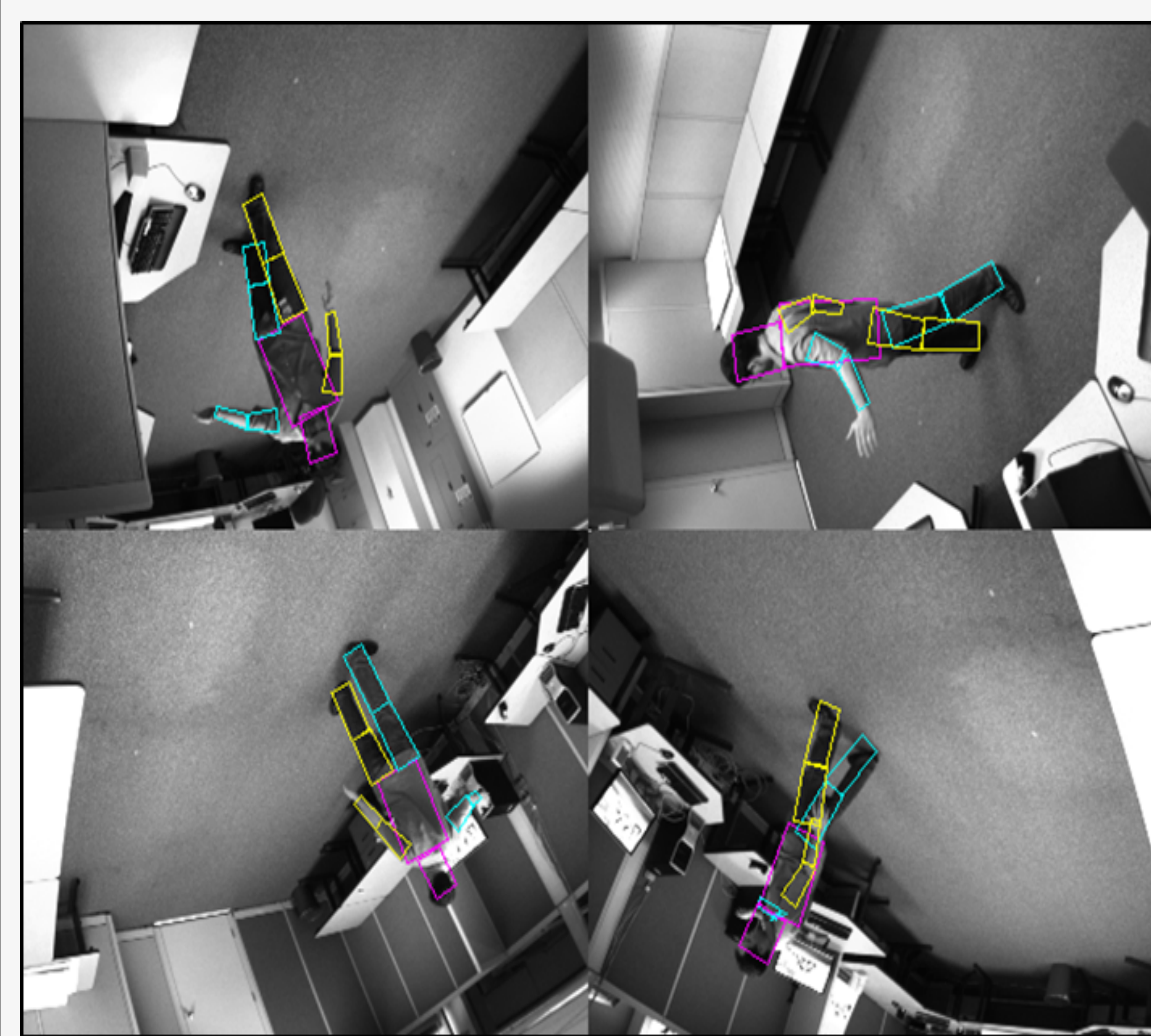


Load Value Approximation

Joshua San Miguel | Mario Badr | Natalie Enright Jerger

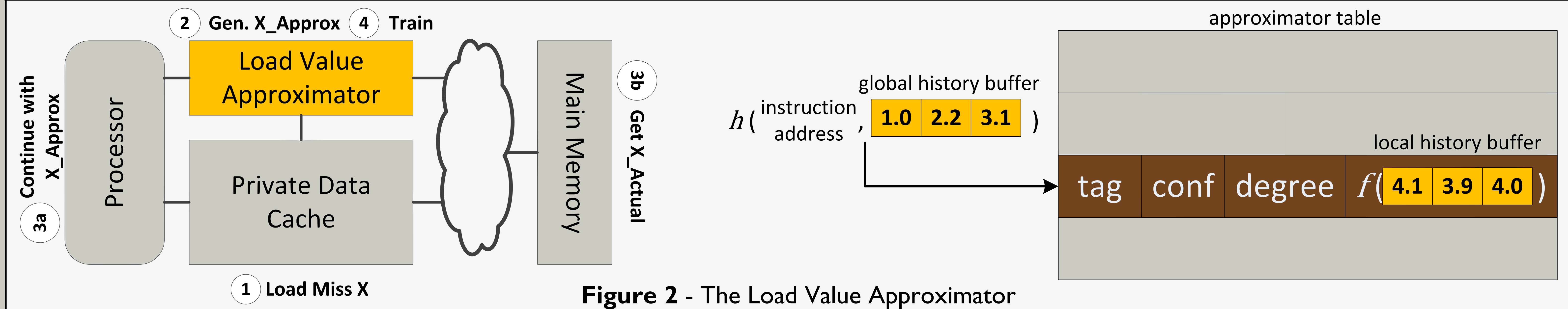


Can **You** Tell The Difference?

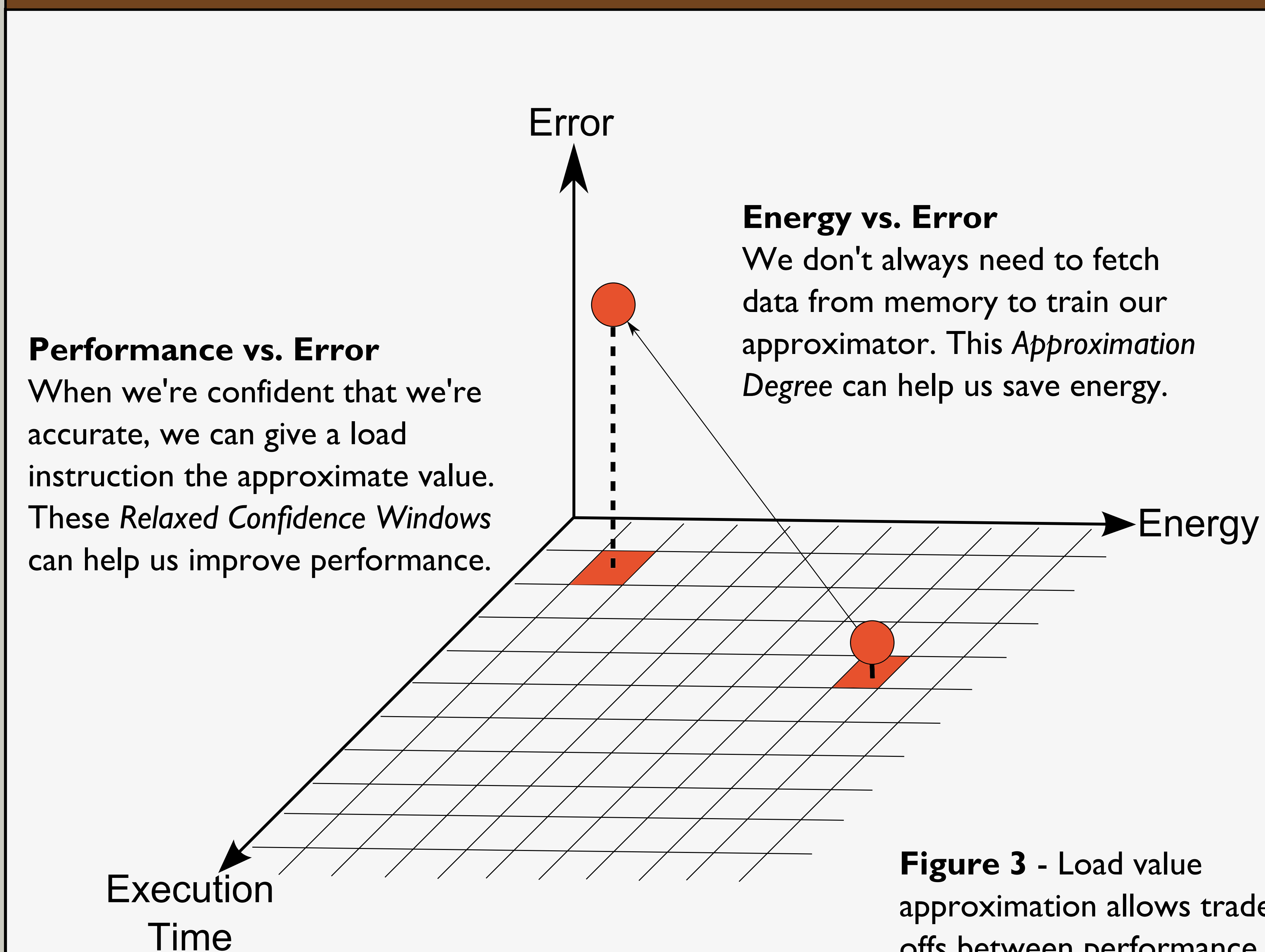


Figure 1 - Bodytrack is a computer vision application that tracks a human body. Above is the output of two different runs of Bodytrack, one using a precise architecture and the other using load value approximation. The similarity is uncanny, and approximating load values can save 44% in energy and improve performance by over 14%.

Decoupling the Cache Block from the Cache Miss



Stop Speculating, Start Rolling (Forward, Not Back)



Results

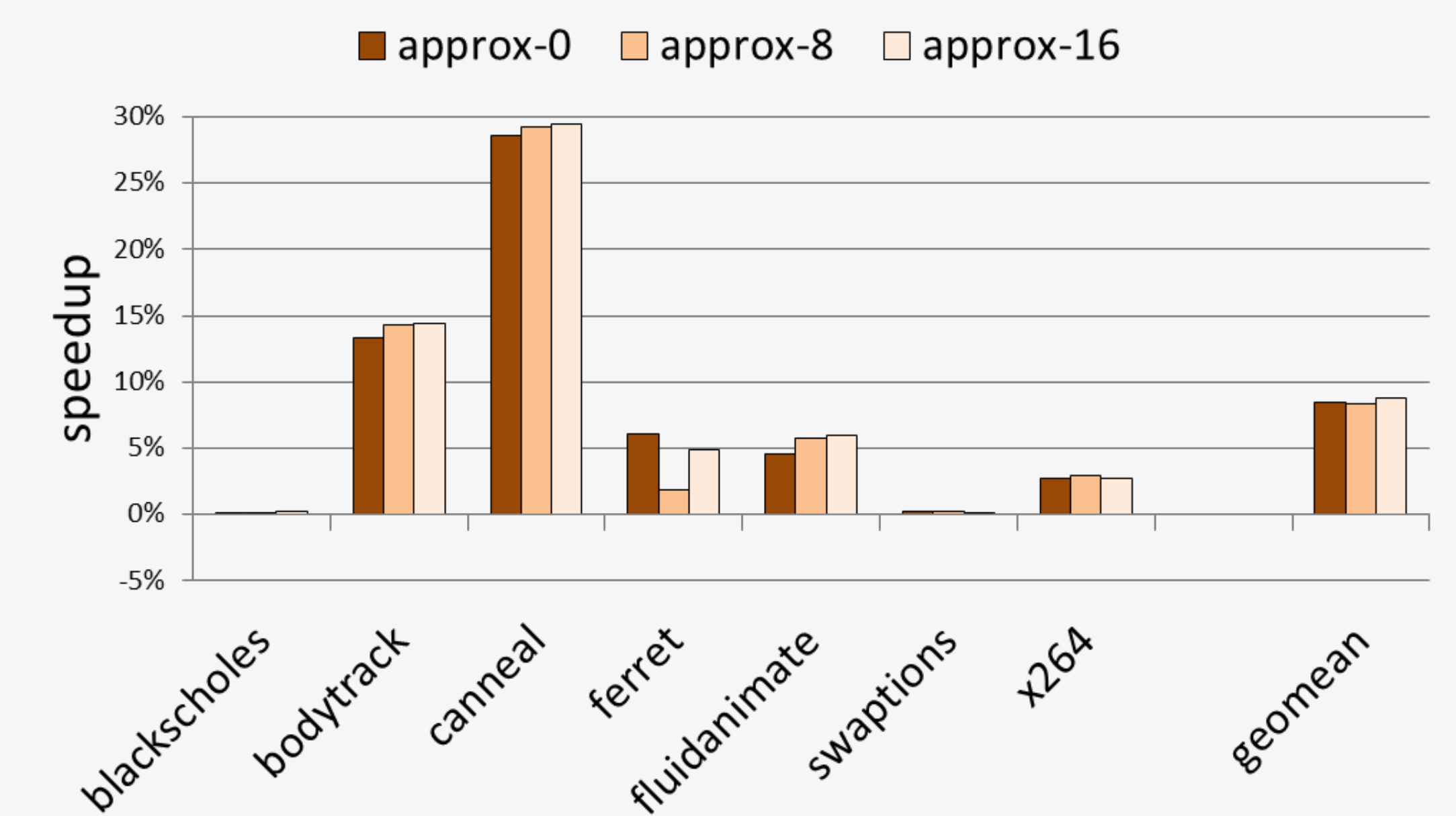


Figure 4 - Load Value Approximation speeds up applications by an average of 9%.

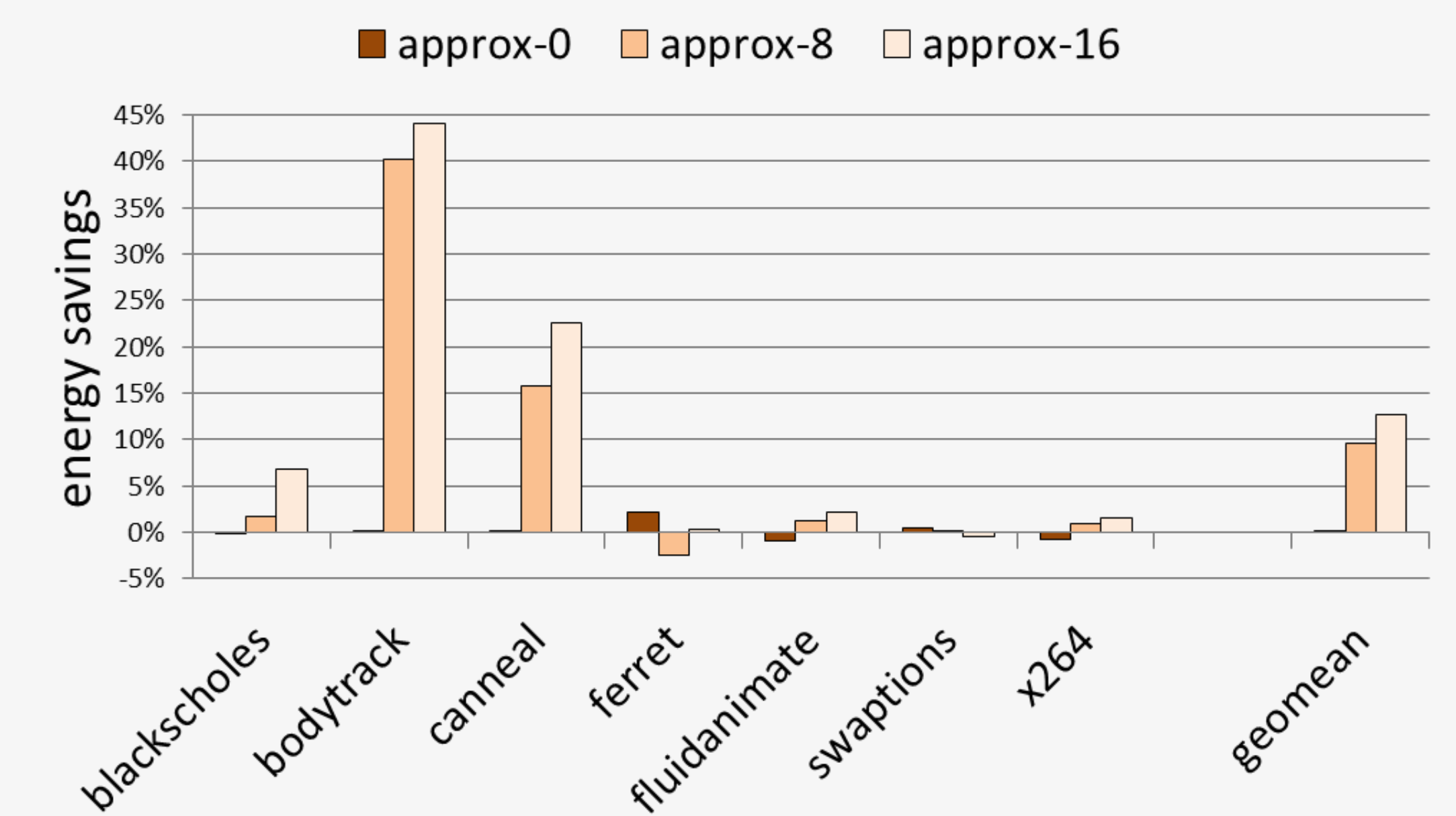


Figure 5 - High approximation degrees lowers the number of fetches to memory, yielding 13% energy savings on average.