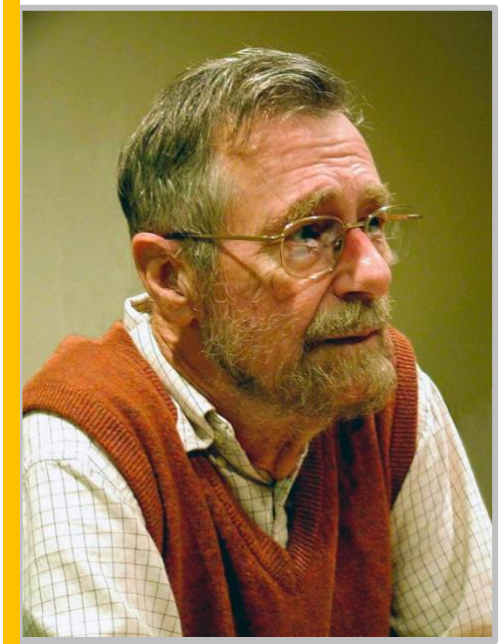
Keck School of Medicine of USC

Department of Population and Public Health Sciences

Division of Biostatistics

The "Happy Scientist" Workshop #22

How I learned to stop worrying and love autodiff



"If debugging is the process of removing software bugs, then programming must be the process of putting them in."
— Edsger W. Dijkstra

Edsger W. Dijkstra (1930-2002) was a Dutch computer scientist, software engineer, and programmer who received the Turing Award in 1972 for contributions to the development of programming languages. (wikipedia.com)

Much of modern computational statistics relies upon high dimensional likelihoods whose gradients can be tedious to derive and correctly implement. Recent advances in automatic differentiation (i.e. autodiff) have enabled ultra-high dimensional objectives to be optimized (e.g., deep learning), yet their use for statistical settings has received less attention. Here I'll showcase the utility of a state-of-the-art autodiff library for Python, JAX. This workshop will introduce the basics of autodiff, how to leverage GPUs for computation by merely setting a single flag (i.e. no complicated code), and conclude with a straightforward implementation of a Poisson regression model.

Presenter: Nick Mancuso, Ph.D.
Assistant Professor,
USC

Thursday, February 8th, 2024
12:00pm to 12:50pm
In-person: SSB Room 114

Zoom link
Meeting ID: 925 4625 3986
Passcode: 709079