

Deep Learning for Symbolic Regression



Given measured scientific data, how to find analytical formulas that reveal their relations? For many years, scientists have discovered such functions based on their own brilliance. As examples, think of the ellipse function discovered by Kepler that describes planetary orbits, Newton's laws that describe forces and movements, and many more. In recent years, AI has been used to discover such symbolic functions automatically. This tutorial introduces this important field known as "Symbolic Regression," including recent progress that utilizes deep learning. The techniques range from genetic programming, to neural networks, and to using important constraints in real-world functions. As the techniques for Symbolic Regression are introduced, both their strengths and shortcomings will also be discussed.

The tutorial workshop consists of two one-hour lecture style sessions with a short break in between. There is no hands-on session in this workshop but examples will be used to facilitate understanding in the lecture. Registration is not needed.

Background knowledge advisable: Some background in machine learning and deep learning is helpful but not required.

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Professor

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Date: Monday, November 08

Time: 2:00 – 4:00 p.m. US Central Time

Meeting ID: 998 4499 3279

Passcode: 724615

Faculty host: Yu Ding, TAMIDS

Biography

Dr. Anxiao (Andrew) Jiang received the B.Sc. degree in electronic engineering from Tsinghua University, Beijing, China in 1999, and the M.Sc. and Ph.D. degrees in electrical engineering from the California Institute of Technology, Pasadena, California in 2000 and 2004, respectively. He is currently a Professor in the Computer Science and Engineering Department at Texas A&M University in College Station, Texas. He has been a visiting professor or associate at California Institute of Technology, University of California in San Diego and Ecole Polytechnique Federale de Lausanne (EPFL), and a consulting researcher at HP Labs, EMC and Microsoft Research. His research interests include deep learning, information theory, data storage, non-volatile memories and algorithm design. Dr. Jiang is a recipient of the NSF CAREER Award in 2008 for his research on information theory for flash memories, the 2009 IEEE Communications Society Data Storage Technical Committee (DSTC) Best Paper Award in Signal Processing and Coding for Data Storage, and the 2020 Non-Volatile Memories Workshop (NVMW) Persistent Impact Prize in information theory and coding.

You can also click this link to join the seminar <https://tamu.zoom.us/j/99844993279?pwd=TkJodWFVRURyMmkwaki4SWZGeVJTQT09>