Georgia Tech | Machine Learning

ML@GT Seminar: Felix Herrmann

Wednesday, April 18th
12pm in Marcus Nano Technology, room 1116

Dr. Felix J. Herrmann is Georgia Research Alliance Eminent Scholar in Energy and a professor at the Georgia Institute of Technology with appointments in the Schools of Earth and Atmospheric Sciences, Computational Science and Engineering, and Electrical and Computer Engineering. Dr. Herrmann will be the 2019 Distinguished Lecturer of the Society of Exploration Geophysicists (SEG). Dr. Herrmann holds a M.Sc. and Ph.D. in Engineering Physics from the Delft University of Technology. He completed his postdoctoral studies at Stanford University and MIT before becoming a professor at the University of British Columbia's Department of Earth, Ocean, and Atmospheric Sciences. He joined the faculty of the Georgia Institute of Technology in October 2017. During his career, Dr. Herrmann has worked on the development of the next-generation of industrial acquisition and computational imaging technologies designed to improve the image quality in complex geological areas at vastly reduced costs and environmental impact.

Aside from driving innovations, by leveraging recent developments in the mathematical and computational sciences, Dr. Herrmann has extensive experience working with industry. At the University of British Columbia, he was the founder and director of the Seismic Laboratory for Imaging and Modelling (SLIM), which hosted the industry Consortium SINBAD. Under his guidance, SLIM became a world leader in the successful integration of transformative scientific developments, such as compressive sensing, randomized linear algebra, and machine learning, into innovative approaches that tackle the most challenging imaging problems. With his move to the Georgia Institute of Technology, Dr. Herrmann plans to broaden his research program to include other imaging modalities. Dr. Herrmann was a long program participant at UCLA's Institute for Pure and Applied Mathematics in the Fall of 2004 and has been involved in public-private partnerships around the world. He serves on the editorial board of Geophysical Prospecting and on the SEG Research Committee.

Title: Extreme scale matrix factorizations in Exploration Seismology

Abstract: We will present some recent work on matrix factorizations with applications that range from full-azimuth seismic data processing w/ coil acquisition to seismic data compression & recovery w/ on-the-fly data extraction, and low-rank representations of omnidirectional subsurface extended image volumes. In all cases, we demonstrate that seismic data and full-subsurface offset image volumes exhibit a low-rank structure at the low to medium high frequencies. This property allows us to come up with (randomized) algorithms capable of exploiting this structure while working with data and image volumes that were until recently unattainable.

**This is joined work with Curt Da Silva, Marie Graff, Rajiv Kumar, and Yiming Zhang

Please RSVP HERE for this lecture as food will be served