USDA ARS Postdoctoral Fellowship Program in Big Data Science and AI Research

Multiple 2-year MS and postdoctoral research opportunities are currently available with the U.S. Department of Agriculture (USDA), Agricultural Research Service (ARS) located at one of the regional ARS locations or with one of our collaborating universities. 100% telework options are possible depending on the position. The SCINet/Big Data Program in collaboration with the AI Center of Excellence at ARS offers exciting research opportunities to motivated participants interested in solving agricultural- or natural resource-related problems at a range of spatial and temporal scales, from the genome to the continent, and sub-daily to evolutionary time scales. One of the goals of these programs is to develop and apply new and emerging technologies, including artificial intelligence (AI) and machine learning, to help solve complex agricultural problems that depend on collaboration across scientific disciplines and geographic locations. Many of these questions rely on the synthesis, integration, and analysis of large, diverse datasets that benefit from high performance computers (HPC) or a cloud computing environment. These opportunities are designed to facilitate cross-disciplinary, cross-location research through collaboration on problems of high priority to the USDA ARS and require an HPC or cloud computing environment. Training will be provided in specific AI, machine learning, deep learning, data science, and/or statistical software as needed for the success of the position.

This unique fellowship program is multi-faceted. All participants will spend time at ARS headquarters in Beltsville, MD for some of their training, but will be based at ARS regional laboratories for mentoring in individual research projects by ARS scientists or university faculty, primarily at Mississippi State University. Each participant will also be expected to participate in collaborative research with scientists at other ARS units or universities, and in program-level activities in support of Big Data and high-performance computing.

About the USDA ARS: The ARS mission involves problem-solving research in the widely diverse food and agricultural areas encompassing plant production and protection; animal production and protection; natural resources and sustainable agricultural systems; and nutrition; food safety and quality. The programs are conducted in 46 of the 50 States, Puerto Rico, and the U.S. Virgin Islands. Programs are also carried out in cooperation with several foreign countries. For ARS to maintain its standing as a premier scientific organization, major investments in computing, networking, and storage infrastructure are required as well as trained scientific personnel. Training in data and information management are integral to the integrity, security, and accessibility of research findings, results, and outcomes within the ARS research enterprise. USDA ARS Chief Science Information Officer, Dr. Debra Peters (ARS-CSIO@usda.gov) can be contacted for additional information.

Specific postdoc opportunities for 2021-2022 include the following:

High Performance Computing and AI Technologies in Agriculture: learn a range of AI computational skills on high performance computers (HPCs) while predicting dynamics of agro-ecosystems (ARS location: Starkville, MS).
https://www.zintellect.com/Opportunity/Details/USDA-ARS-2021-0035

High Performance Computing and Prediction of Geospatial Dynamics: learn about the challenges in predicting dynamics of complex agro-ecosystems while learning a range of computational skills needed to conduct complex geospatial analyses in an HPC environment (multiple ARS locations).
https://www.zintellect.com/Opportunity/Details/USDA-ARS-2021-0005

Development of novel algorithms and machine learning models for integrated analysis of agricultural systems: develop new analysis methods for georeferenced agricultural data with emphasis on epidemiology and disease ecology. For more information, please contact Dr. Ram Ramkumar [ramkumar@cse.msstate.edu]

Modeling complex dynamic systems related to animal production and health: develop mathematical and stochastic models of complex dynamics systems related to animal production and health. Methods may include system dynamic stock and flow modeling or other programing methods. For more information, please contact Dr. David R. Smith [dsmith@cvm.msstate.edu]

Biomathematician/Biostatistician to develop novel mathematical and statistical tools for describing spatial phenomena using high-resolution remote sensing and biotelemetry datasets, coupled to applications in high-performance computing to facilitate rapid data analysis. https://explore.msujobs.msstate.edu/en-us/job/500405/postdoctoral-associate

Geospatial Statistician/Spatial Data Scientist: apply your spatial statistics skills to diverse datasets ranging from epidemiology in domestic livestock to contact tracing in wild carnivores. https://explore.msujobs.msstate.edu/en-us/job/500273/postdoctoral-associate