



**POSITION ANNOUNCEMENT # 0001-4990
REQUISITION # 507829**

Title: Assistant Professor in Big Data Analytics in Agricultural and Natural Resources Systems

Location: Agricultural & Biological Engineering (ABE)
Institute of Food and Agricultural Sciences (IFAS)
University of Florida, Gainesville, Florida

Salary: Commensurate with Qualifications and Experience

Review Date: For full consideration, candidates should apply and submit additional materials by September 15, 2018. The position will open until a viable applicant pool is determined.

Duties and Responsibilities

This is a 9-month tenure-accruing position that will be 60% research and 40% Extension in the Agricultural and Biological Engineering Department (ABE), Institute of Food and Sciences (IFAS). This assignment may change in accordance with the needs of the unit as well as the interests and skills of the faculty, to create a mutually beneficial, rewarding and productive path forward.

Current developments in data sciences are producing fundamental shifts in many economic sectors. However, in spite of their central role in human welfare, the potential for big data and analytics for Agricultural and Natural Resources systems remains largely untapped. The time horizon in the “farm to fork” ecosystem must be re-visited using better data, curated data, small data, big data, “bigger” data. Hence, making data and analytics meaningful in the context of a wholistic “farm to fork” concept (which spans several organizations and industries) is central to advancing the mission of agriculture and food systems for the future. The successful candidate must grasp the immense significance of ABE related research in helping to feed 10 billion people in the world, circa 2050. Where and how can data, information and knowledge help in this gigantic jig-saw puzzle? If data is the “new salt” then how can it improve lives and the future of agricultural and natural resources systems?

The faculty member in this position will be responsible for building an active, successful, internationally recognized, and externally funded, research and extension program, which will embrace big data and analytics, with a focus on, but not limited to, the convergence of food, agriculture and natural resources systems. The systems and solutions approach to real world problems cannot be contained by departmental silos. Hence, ABE at UF is seeking a visionary who values inclusion, convergence and integration, to help ABE by removing the barriers that often constrain academic departments and old-age boundaries. UF/IFAS ABE is seeking intellectual leadership that sustains cross-fertilization as a key

to create that which is not yet conceived, or yet to be created, or even imagined. The candidate should be able to effectively interface with others in UF and reach out to local, national and global partners and stakeholders to inculcate and uphold UF/IFAS high standards and vision.

The candidate will be sufficiently versed in the academic underpinnings (mathematics, statistics, computation, ML) and at a pragmatic level will qualify as a “data engineer” and/or data scientist. The successful candidate will conduct research in food, agriculture and natural resources systems aimed at one or more of the following (not limited to):

- [1] trans-disciplinary ideas that break the status quo in the analysis and management of these systems.
- [2] identify and combine current multiple big data types from these systems and future data needs
- [3] create new sets of data curation technologies to extract value from unstructured big (large) data
- [4] innovate tools to explore meaningful identification of information from data (big and small)
- [5] invent new automated feature engineering and feature selection mechanisms
- [6] develop novel algorithms to challenge current ML, ANN and AI approaches
- [7] integrate ontology, semantics and knowledge representation in analytics
- [8] simulate “what if” models (spatio-temporal, time series, agent-based, etc.)
- [9] uncover non-obvious relationships and patterns to explore “unknown unknowns”
- [11] connect globally with industry, scientists and institutions

The successful candidate is expected to view research and development outcomes also from the perspective of entrepreneurial innovation, social business, and systems integration, which, if adequately implemented, may improve lives and help civilization, at large. A case in point is the abundance of miscellaneous high performance computational platforms available across academia, yet the gap between research, analytics and application, is an ever-increasing chasm. Can integration of high performance virtual environments serve as a bridge to improve the future of food, agriculture, and natural resource systems?

Background in agricultural and biological engineering, or any related engineering or quantitative scientific discipline is desirable. Interest in the land-grant mission of ABE and IFAS, however, is necessary. The ability to re-learn, and un-learn, is crucial. The desire to delve deeper will determine success, in the context of making data and information meaningful, and relevant, in near real-time, to support operational decision systems in complex systems and system of systems, pertaining to the current and future ecosystem of agricultural, food and natural resources. Making the tools of data, information, and knowledge *discovery* relevant to biological engineering in agriculture will be an important step forward.

The successful candidate is expected to create an innovative Extension program, that may include online components, workshops and other forms of training and information delivery that embrace novelty and inspire stakeholders. The successful candidate must have an interest to partner with stakeholders and content experts to identify how data may be catalytic in the ***context of the content*** related to the plethora of sub-fields in this domain, for example the vast nexus of FEWS (food/energy/water/sanitation) issues. Successful applicants will create their own brand of interaction including directing graduate student research, establishing a publication record, attract federal and industrial extramural funding, shape the future through thought leadership, participate in multidisciplinary teams, and work with international

organizations (FAO, UNDP, ADB, EBRD, World Bank), foundations, and industry, to create new partnerships, to bolster the role of data analytics and real-time applications, at the edge, in the field. UF/IFAS offers the candidate immediate access to UF Informatics Institute, UF Research Computing, UF Water and Climate Institutes, Florida Institute for Cybersecurity Research, UF ECE MIST Center for Internet of Things (IoT), UF Nanoscale Research Facility, UF Sid Martin Biotechnology Institute and other programs at various UF schools, including medicine, law and the school of business management.

UF IFAS is a land-grant institution. Faculty are expected to support and engage in all three mission areas—Research, Teaching and Extension—regardless of the specifics in the position description. The successful candidate is expected to implement her/his own key performance indicators (KPI) which will change the future of measuring academic progress, institutional recognition and impact parameters. In keeping with the overarching mission of UF/IFAS, leadership is essential to create new leaders from the *student* body, research is necessary to provide a new *compass* for the world to adopt in their quest to draw a new map of the future, and *extension* is key to share the fruits of leadership and research with the ecosystem of institutions, industry and international bodies, to lift many boats, locally and globally.

Qualifications

Required: Ph.D. or doctorate (foreign equivalent acceptable) in any relevant field including, but not limited to, mathematics, statistics, computational mathematics, computer engineering, computer science, econometrics, linguistics and engineering. Understanding and/or interest in biological engineering, agriculture, food engineering, food science, chemistry, physics, microbiology, virology, biotechnology, nanotechnology and economics, may be helpful to create an effective working trans-disciplinary group or consortium between academia and outside stakeholders. Candidates should have demonstrated skills in verbal and written communication, interpersonal relationships, and procurement of extramural funding. Candidates must be supportive of the mission of the Land-Grant system. Candidates must also have a commitment to IFAS core values of excellence, diversity, global involvement, and accountability.

Preferred: Knowledge and experience with new trends and techniques are desirable in some of these areas:

1. Data Mining, Auditing, Curation, Visualization and other tools to optimize data (pipelines, architectures, data sets and data models)
2. Experience with some of the following tools and technologies:
 - Machine Learning (including Generative Adversarial Networks in AI and DL)
 - Hadoop, Spark, Kafka
 - Relational SQL, NoSQL databases, streaming databases
 - Stream-processing systems such as Storm and Spark-Streaming
 - Data pipeline/workflow management tools, eg, Azkaban, Airflow
 - Cloud services (EC2, EMR, RDS, Redshift) and edge data (IoT, wireless sensor networks)
 - Python, Java, C++, R, SAS.

Postdoctoral and other professional experience, including academic and industry experience, are positive attributes. The position is expected to provide appropriate levels of service to the department, college, university and/or discipline. Specific expectations are described in department, college and university policy statements regarding evaluation and promotion.

Background Information:

The University of Florida (<http://www.ufl.edu>) is a Land-Grant, Sea-Grant, and Space-Grant institution, encompassing virtually all academic and professional disciplines, with an enrollment of more than 53,000 students. UF is a member of The Association of American Universities. The Institute of Food and Agricultural Sciences (<http://ifas.ufl.edu>) includes the College of Agricultural and Life Sciences (<http://cals.ufl.edu>), the Florida Agricultural Experiment Station (<http://research.ifas.ufl.edu>), the Florida Cooperative Extension Service (<http://extension.ifas.ufl.edu>), the College of Veterinary Medicine (<http://www.vetmed.ufl.edu>), the Florida Sea Grant program (<http://www.flseagrant.org/>), and encompasses 16 on-campus academic departments and schools, 12 Research and Educational Centers (REC) located throughout the state, 6 Research sites/demonstration units administered by RECs or academic departments, and Florida Cooperative Extension Service offices in all 67 counties (counties operate and maintain). The School of Natural Resources and Environment is an interdisciplinary unit housed in IFAS and managed by several colleges on campus. IFAS employs over 2500 people, which includes approximately 900 faculty and 1200 support personnel located in Gainesville and throughout the state. IFAS, one of the nation's largest agricultural and natural resources research and education organizations, is administered by a Senior Vice President and four deans: the Dean of the College of Agricultural and Life Sciences, the Dean for Extension and Director of the Florida Cooperative Extension Service, the Dean for Research and Director of the Florida Agricultural Experiment Station, and the Dean for the College of Veterinary Medicine. UF/IFAS also engages in cooperative work with Florida A&M University in Tallahassee.

More information about the ABE Department can be found at <https://abe.ufl.edu/>. The UF/IFAS ABE Department is ranked 4th in graduate programs and 6th in undergraduate programs by US News & World Report. The program offers undergraduate and graduate degrees in both the HWCOE and CALS and minors in Precision Agriculture and Packing Science.

Employment Conditions

This position is available September 2018, will be filled as soon thereafter as an acceptable applicant is available. Compensation is commensurate with the education, experience, and qualifications of the selected applicant.

Nominations

Nominations are welcome. Nominations need to include the complete name and address of the nominee. This information should be sent to:

Please refer to Requisition # 507829
Dr. Eric McIamore, Chair, Search and Screen Committee
University of Florida
Agricultural and Biological Engineering Department
PO Box 110570, Gainesville, FL 32611-0940
Telephone: 352-392-1864
Facsimile: 352-392-4092

Electronic Mail: emclamore@ufl.edu

Application Information

- Individuals wishing to apply should go online to <http://explore.jobs.ufl.edu/cw/en-us/job/507829> and submit:
 - Application
 - Cover letter that states applicant's interest in the position and qualifications relative to the credentials listed above
 - Curriculum vitae
 - Contact information for three references willing to write letters of recommendation
 - Philosophy of Teaching Statement
 - Statement of Research

Final candidate will be required to provide official transcript to the hiring department upon hire. A transcript will not be considered "official" if a designation of "Issued to Student" is visible. Degrees earned from an education institution outside of the United States are required to be evaluated by a professional credentialing service provider approved by National Association of Credential Evaluation Services (NACES), which can be found at <http://www.naces.org/> .

The University of Florida is an Equal Opportunity Institution dedicated to building a broadly diverse and inclusive faculty and staff. The selection process will be conducted in accord with the provisions of Florida's 'Government in the Sunshine' and Public Records Laws. Persons with disabilities have the right to request and receive reasonable accommodation.