Mechatronics and Artificial Intelligence (AI) Engineering

65% R and 35% T; 9-month appointment

Closing date: Open until filled

The Biosystems Engineering and Soil Science Department (BESS) at the University of Tennessee Institute of Agriculture invites qualified applicants for a tenure-track assistant professor position in mechatronics and artificial intelligence (AI) systems engineering.

Vision for Position: The candidate hired for this position will develop a nationally and internationally recognized research and teaching program in mechatronics and AI systems for applications in agriculture and natural resources, including plant and animal production and protection, autonomous systems for labor-intensive tasks, and monitoring air, soil, and water qualities. Artificial intelligence analysis, intelligent electronics, robotics, and machinery systems are increasingly required to implement sustainable and cost-effective practices in agricultural and natural resources systems, maximizing productivity and profit and minimizing environmental damage. Relevant agricultural and natural resources systems in Tennessee include water resources and agricultural production systems of plants (e.g., row crops, horticulture, specialty plants), animals (e.g., livestock and poultry), and forestry. The new mechatronics/AI faculty will develop innovative tools and technologies that integrate electronic systems, robotics, and mechanical systems, and leverage new advancements in data analytics for better control and autonomous decision making as well as existing BESS faculty expertise in sensors, data analytics to enable decision-making, and controls, leading to mechatronics solutions for diversified and integrated agricultural systems. This integration will promote the development of mechatronics solutions to better serve more diversified and integrated agricultural systems in the future and will enable the new faculty to leverage existing BESS faculty expertise in sensors, data analytics to enable decision-making, and controls. To implement and sustain those solutions requires a highly-trained and competent cadre of engineers, at both the undergraduate and graduate levels.

Research Expectations: The successful candidate will develop a thriving research program, evidenced by successful and sustained grants activity, a strong publication record, regional / national / international recognition by peers as an expert in this research area, active mentoring of graduate students and /or post-doctoral researchers, and outreach to stakeholders making use of the information.

Research in this position should advance our understanding and tools to address topics such as, but not limited to:
- automated crop handling and harvesting
- human-robot interaction in precision agriculture
- autonomous navigation in agricultural systems
- integration of sensors, machines, and information systems for real-time field operations and related data collection in agricultural ecosystems
- sensing and robotic systems for improved animal welfare
- automated animal processing
- biomimicry or biological-inspired machines and devices

Teaching expectations: Mechatronics/AI engineering is a topic of increased interest to students, and the addition of such an engineer on the faculty will enhance biosystems engineering teaching programs at the undergraduate and graduate levels. The successful candidate will teach classes in support of the Biosystems Engineering undergraduate and graduate programs. They will also provide leadership to a Mechatronics/AI thrust within those programs. Teaching expectations will likely include lead teaching BSE411 Mechanical Systems Engineering (3 credit hours, taught once every year), partial involvement with teaching the BSE400/404/444 Senior Design sequence, and teaching a Senior/graduate course BSE4xx/5xx Mechatronics/AI course as an undergraduate Technical Elective / broad-interest graduate course (3 credit hours, once every year). The candidate would also be expected to periodically participate as a mentor in BSE Senior Design projects. Scholarship and professional development to promote teaching excellence is required.

The candidate will provide a welcoming and supportive environment for students, assisting with recruitment, retention, mentoring, and graduation. They will encourage and guide students seeking opportunities for professional development through activities such as student clubs, international experiences, internships, and career opportunities.

In addition, the candidate will successfully mentor graduate students through their studies and completion of their degree requirements, and give career guidance beyond graduation.

Service Expectations: BESS attempts to minimize service expectations on faculty developing new programs, but there are times when their expertise and opinions are of great value, especially in relation to questions regarding the department's future. This generally includes involvement in faculty curriculum discussions and service on short-term ad hoc search committees, committees discussing commitment of departmental resources, etc. There may also be a need for the faculty member to provide specific input at the Institute or University levels. Appropriate service responsibilities are assigned only after discussion between the faculty member and the Department Head.

Required Qualifications: Prior to beginning active employment, the candidate must achieve a doctorate in Agricultural, Biological, Biosystems, Electrical, or Mechanical Engineering or other closely related discipline. Candidates should have demonstrated excellent verbal and written communication skills, the ability and willingness to work in an interdisciplinary environment with a variety of engineers and scientists, and the likelihood of successfully pursuing external funding. Candidates must also have a nascent record of peer-reviewed publications.

Desired additional qualifications:
- Licensed Professional Engineer or eligible for licensure
- Relevant postdoctoral and/or teaching experience.
- Supervisory experience.
- Experience in outreach and understanding of the Land Grant mission.

***Application*:** Review of applications will begin June 1, 2022, and will continue until the position is filled. Please send (in a single electronic file, pdf preferred) a letter of application that includes the following: a) a short summary of research interests and experience; b) a short summary of teaching interests and experience; c) a detailed CV / resume; and d) contact information for at least four professional references. Please submit this directly via Interfolio (apply.interfolio.com/108064), and address any questions regarding the program or positions to Search Committee Chair Daniel Yoder (dyoder@utk.edu).

All qualified applicants will receive equal consideration for employment and admissions without regard to race, color, national origin, religion, sex, pregnancy, marital status, sexual orientation, gender identity, age, physical or mental disability, or covered veteran status.

Eligibility and other terms and conditions of employment benefits at The University of Tennessee are governed by laws and regulations of the State of Tennessee, and this non-discrimination statement is intended to be consistent with those laws and regulations.

In accordance with the requirements of Title VI of the Civil Rights Act of 1964, Title IX of the Education Amendments of 1972, Section 504 of the Rehabilitation Act of 1973, and the Americans with Disabilities Act of 1990, The University of Tennessee affirmatively states that it does not discriminate on the basis of race, sex, or disability in its education programs and activities, and this policy extends to employment by the University.

Inquiries and charges of violation of Title VI (race, color, national origin), Title IX (sex), Section 504 (disability), ADA (disability), Age Discrimination in Employment Act (age), sexual orientation, or veteran status should be directed to the Office of Equity and Diversity (OED),1840 Melrose Avenue, Knoxville, TN 37996-3560, telephone (865) 974-2498 (V/TTY available) or 974-2440. Requests for accommodation of a disability should be directed to the ADA Coordinator at the Office of Equity and Diversity.