In support of a pending award from the U.S. Army Ground Vehicle Systems Center, the University of Alabama at Birmingham’s School of Engineering has three open Research Professor positions.

During the 4-year research program, novel fundamental research topics will be developed and applied in a variety of laboratories, virtual, and real-world settings for demonstration of increased capabilities for autonomous ground vehicles in operationally relevant terrain and off-road environments. The successful candidates will have an exceptional opportunity to build their professional career in close collaboration with UAB faculty members, researchers and engineers of different professions, and private industries – working together and complementing each other on designing and establishing a unique research and engineering laboratory facility on autonomous ground vehicle mobility in terrain conditions. Being funded for 2 years with a possible extension of funding for another 2 years after a review of accomplishments, accepted candidates are expected to build sustainable externally funded research in collaboration with the faculty members and other researchers.

Interested candidates should email a single PDF
1. A cover letter with a statement of purpose in a particular position
2. CV with their qualifications, research achievements and clear indication of accomplishments and motivation in a position of their interest. The names and contact information of three references should be included in the CV, and
3. Three reference letters to
Dr. Vladimir Vantsevich, Principal Investigator and Professor of Mechanical Engineering
vantsevi@uab.edu

Place Research Professor Position – XXXXXX in the subject line of your email. Reference Number for the Position of Interest is XXXXXX. In case candidates might want to be considered for both positions, they may place two reference numbers.

Review of applications will begin April 27, 2020 and continue until the positions are filled. Successful candidate may be appointed as early as September 1, 2020.

Three Research Professor Positions

PVS-2
This Research Professor position is in research areas of physics-based modeling and simulation of (i) Exteroceptive sensors for the use in autonomous vehicles for navigation, perception, localization, look-ahead landscape/terrain identification, weather assessment, and terrain trafficability assessment in-real time, and (ii) Proprioceptive sensors embedded in vehicle powertrain and chassis systems for the use in autonomous control of autonomous vehicle systems. The research work will also include physical sensor design, physical and virtual sensor validation in varieties of environmental conditions and terrain texture, soil density and mechanical properties, etc.

The person admitted for this position is expected to develop a new research direction(s) in one or several above-listed areas that include, although are not limited to bio-inspired sensors for facilitating vehicle autonomy, non-destructive soil penetration methods, managing data of exteroceptive and proprioceptive sensors, machine learning algorithms for image reconstruction, etc. The research direction(s) should be establish a leading research area in the new Physical and Virtual Sensors Lab.
In collaboration with industry partners, the Research Professor will lead the implementation and development of research outcomes in hybrid simulations of autonomous vehicles. Practical and hands-on experience is a requirement. Industrial experience is an additional plus.

AMS-1
This Research Professor position is in areas of non-linear multi-body, coupled, and inverse dynamics. Dynamic decoupling of non-linear systems and inverse dynamics approach to non-linear cyber-physical systems is a specific interest.

The Research Professor is expected to develop a new research direction in the above-listed areas with applications to autonomous vehicle dynamics and dynamics of autonomous vehicle systems. In particular, decoupling of vehicle systems for the purpose of autonomous vehicle mobility in complex terrain conditions is one of the research directions of autonomous vehicles with mechanical and electrical powertrains. Knowledge in terramechanics and off-road vehicle dynamics for mobility modeling and assessment is a necessary attribute of this position.

The Research Professor will be working with faculty members and students on the establishing of the new Autonomous Mobility Simulation Lab. In collaboration with industry partners, the Research Professor will lead the implementation and development of research outcomes in hybrid simulations of autonomous vehicles. Practical experience in software development and industrial experience is an additional plus.

ASD-7/PVS-3
This Research Professor position is in areas of solid dynamics, composite materials, fracture mechanics, material modeling, theory of plasticity, and finite element analysis.

The Research Professor is expected to develop research directions in the above-listed areas with applications to tire-soil non-linear dynamics, structural design of vehicle body, vehicle systems, and design of the tire test rig. This research will be enhanced with digital image correlation analytical and experimental studies using the camera-vision-based images and measurements to define and characterize the shear stress - strain relationship of tires for the use in modeling of the tire-soil coupling.

The Research Professor will be working with faculty members and students on the establishing of the new Autonomous System Design Lab. In collaboration with industry partners, the Research Professor will work on the design of the tire test rig. Industrial experience is an additional plus.