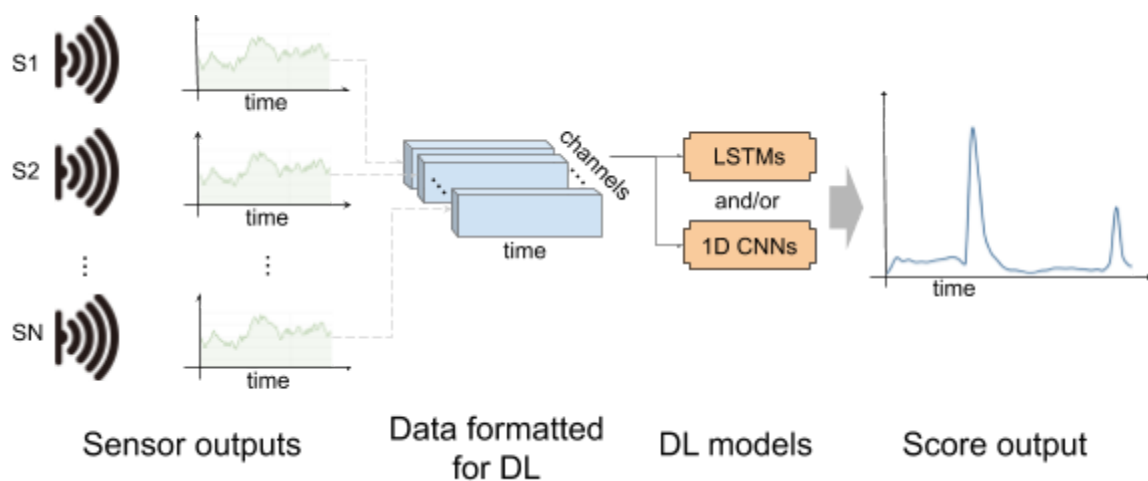


Date: October 1, 2020

Two Assistant Professors in the Computer Science Department, [Abde Mtibaa](#) and [Badri Adhikari](#), have received a National Aeronautics and Space Administration (NASA)–Small Business Technology Transfer (STTR) Program’s Phase I award to develop deep learning methods for accurately monitoring, and managing environmental readings to efficiently detect abnormal behaviors such as gas leakage. They will deploy and test the deep learning methods which will be deployed into an autonomous tracking system that guides a sensor array to move closer to the origin of the anomaly (leakage) and track the cause. Once an anomaly is detected and the source origin has been predicted, the autonomous tracking system uses reinforcement learning to self-drive an unmanned moving robot carrying the sensor array. Eventually, the proposed scheme would be implemented, tested, and deployed using AstroBee, NASA’s new free-flying robotic system.

Astrobee helps astronauts reduce time they spend on routine duties, leaving them to focus more on the things that only humans can do. Working autonomously or via remote control by astronauts, flight controllers or researchers on the ground, the robots are designed to complete tasks such as taking inventory, documenting experiments conducted by astronauts with their built-in cameras or working together to move cargo throughout the station. Dr Mtibaa and Dr. Adhikari will collaborate with SPEC Sensors LLC to provide a phase I prototype of the software and hardware needed to perform autonomous environmental monitoring and management.

The NASA award and details can be viewed at <https://sbir.nasa.gov/SBIR/abstracts/20/sttr/phase1/STTR-20-1-T4.04-5080.html>



**Figure.** Detecting anomaly from multiple sensor signals using deep learning (DL) algorithms.