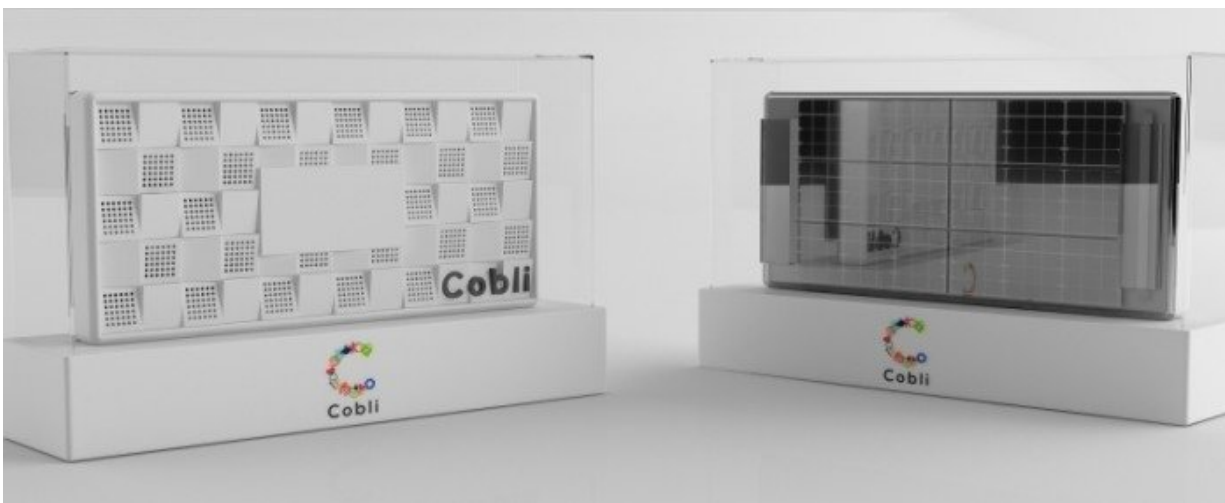


Startup uses artificial intelligence to analyze vehicle driver behavior

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The device is fitted with a 30 cm x 15 cm solar panel (photo) that can be affixed to any part of a vehicle that receives sunlight . Credit: Cobli

Brazilian startup [Cobli](#) has specialized in technological solutions for vehicle fleet monitoring and management. It is currently focusing on safety and refining a tool to identify driver behavioral patterns by analyzing data collected by a solar-powered tracker.

The project is based on machine learning, an application of artificial intelligence, and had the support from the São Paulo Research Foundation—FAPESP through its Innovative Research in Small

Business Program (PIPE). "The algorithm uses the data collected to establish a driving profile with more than 90% accuracy," says engineer Rodrigo Mourad, a partner and co-founder of Cobli.

According to Mourad, in one or two weeks of use, the [system](#) can glean a sufficient amount of data—on speed, acceleration, braking and curve angles—to produce a profile of the driver's vehicle handling habits. Directly linked to the question of traffic safety, these data also have an economic and financial impact on the fleet owner's business since aggressive driving increases [fuel consumption](#) and the cost of vehicle maintenance.

The system also collects data on location (via GPS) and vehicle performance, generating information that can be accessed by a smartphone or tablet. In the event of an accident, the device automatically sends an emergency text message with the vehicle's location to registered contacts, who are typically individuals in the driver's company and family members.

Cobli's system replaces the conventional personal identifier, or PIN, hardwired in a key fob or card and read by a sensor installed in the vehicle, a resource widely used by the logistics industry. Mourad says this system can easily be circumvented if a driver lends his ID card to another person, for example. "Hardware is a static solution, whereas logistics is dynamic," he argues.

Solar power

Cobli's strategy has been to invest in material and human resources, data science, and the Internet of Things (IoT) applied to logistics. In this context, a PIPE project that started in March 2017 and is scheduled to end in February 2019 aims to refine the methodologies used by Cobli for data collection and data analysis.

Lucas Brunialti, an information system specialist and Cobli's chief technology officer, explains that the current data collection system requires an electronic device which is imported and used by other logistics firms. The device is connected to the vehicle's on-board diagnostic (OBD) tracker. "What makes us different is how we process the data collected," he says. "We offer reports for use by route planners and fleet managers."

With support from PIPE-FAPESP, stage two of Cobli's project entails the development of a new device that does not depend on the OBD port or electric power. It is fitted with a 30 cm x 15 cm solar panel and can be affixed to any part of the vehicle that receives sunlight. According to Brunialti, [solar power](#) will extend the range of possible applications. "It will be possible to install it on the chassis of a truck to track the cargo," he says. The device has an internal battery that stores solar energy so that it can be used at night as well as during the day.

The firm already has a prototype of the new device and expects to finalize it by the end of 2018. "Several customers of Cobli have expressed an interest in testing the product," Mourad says.

Behavioral deviations

Another aspect of the project supported by FAPESP is evolution of the software. Currently, the system is able to analyze various characteristics of driving behavior, enabling Cobli's customers to identify their drivers and provide personalized guidance to those who drive dangerously. Thanks to this system, the firm discovered, for example, that when drivers are in São Paulo City, they have a habit of slowing down by approximately 25% when approaching a speed trap and resume their previous speed after they pass it. In addition to the risk involved with sharp braking, this behavior also results in higher fuel consumption and wears out tires and brake components faster.

The challenge is now to develop an algorithm that identifies deviations in the driver's standard behavior. Once the system recognizes the driver, it should rapidly detect anomalies that may be associated with drug taking, drowsiness, or the use of a cellphone while driving. According to Mourad, partnerships with fleet owners will be fundamental to achieving efficient results when analyzing data in the system. "When a change in a driving pattern is detected, we'll contact the customer so that they can find out what's happening," he says.

Prizewinning startup

Cobli currently has 50 employees, 20 of whom are specialists in product development. "We have engineers, data scientists, financial analysts, designers, and even anthropologists as we have to know our customer well in order to make the system more useful and easy to use," Mourad says.

The firm's entire structure was created in only three years. It was founded in 2015 after US entrepreneur Charles Parker Treacy identified Brazil as a business opportunity. Treacy had graduated in mathematics from Duke University and was then enrolled in an MBA program at Harvard. He decided to invest in the logistics industry in Brazil. The firm was born without the support of an incubator or research institution. Headquartered in São Paulo City, it began with the partners' capital and its own office.

Provided by FAPESP

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