



Case #83

## **Wireless Sensor Approach to Bicycle Suspension Tuning**

The mountain bike industry exhibits some of the fastest and most dramatically progressing technology of any sport. Athletes now push their equipment to handle pressure that would have been thought impossible just 15 years ago. The suspension is particularly incredible, allowing a rider to drop off a 10 foot cliff or charge through a field of small boulders at 20 miles per hour.

Currently there exist two methods of tuning suspension for a specific cyclist. One is to follow the factory recommendations, which only consider the dimensions of the cyclist. The other method is to ride the bike on trails and adjust the suspension according to what feels right, which can allow the settings too drastically deviate from the recommended range, eventually leading to damage within the suspension components, or possibly injuring the rider.

Professor Frolik has invented a method of tuning suspension that uses signal processing to take data on the acceleration of the suspension while the cyclist is using the bike to determine exactly how the suspension should be set up. This allows the suspension to be tuned to the optimal settings while not deviating dangerously far from the factory recommendations. The technology makes use of wireless accelerometers that are now found in many handheld electronics and provides a systematic and efficient way to optimize the suspension tuning according to all variables.

### **Applications:**

- Full suspension and front-only suspension mountain bikes.
- Potential to be expanded to motorized sports that are similar to mountain biking, such as motocross, ATV, and snowmobiling.

### **Advantages:**

- Introduces a novel method of tuning suspension for the optimal settings given a cyclist's riding style and size.
- Helps protect the cyclist from injuries due to improperly tuned equipment.

### **Intellectual Property and Development Status:**

US Patents 7,395,167 and 7,831,403  
Looking for licensing opportunities.

### **Inventor:**

Jeff Frolik

### **Contact Information:**

Kerry Elizabeth Swift  
Technology Licensing Officer  
Kerry.Swift@med.uvm.edu  
802-656-8780