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### Moss Shimek's Long and Winding Road

AUSTIN, TEXAS—November 29, 2011

By Carol Grosvenor



*This 2001 photo of Moss Shimek was taken about two weeks before his life-changing accident. He was on the way to the racetrack that day to practice riding it.*

### Moss Shimek's Long and Winding Road

Meet **Moss Shimek**, a 34-year-old Ph.D. student in the Department of Mechanical Engineering who will graduate in December. **Professor Eric Fahrenthold** served as his research advisor on his research topic, the design of multilayer fabrics that are used in the design of bulletproof vests. Moss is married to a mechanical engineer, **Carrie Labunski Shimek**, who specializes in product design and development. They met in the Mechanical Engineering Department as undergraduates, and are now the parents of two young children. He is currently interviewing for teaching and/or research positions. By all accounts, this is impressive, but not particularly unusual. However, this is the end of the story, not the beginning. The fact that Moss will soon walk up on stage, shake hands with Dean Fenves and receive his diploma could be considered a miracle — or maybe it's the result of incredible determination, grueling hard work, sheer guts, love, devotion, loyalty, discipline and the strong desire not to give up that is making it possible. In 2001, he nearly died in a high-speed motorcycle accident, and has been on the comeback trail ever since. Carrie has been with him every step of the way.

### Bachelors Degree

As a child growing up in East Dallas, Moss first wanted to become a dentist, then an inventor, refining that to biomedical engineering, but when he started his undergraduate career in 1995, there wasn't such a degree, so he enrolled in mechanical engineering. After taking *Intro to*



*Moss Shimek will receive his Ph.D. from the Department of Mechanical Engineering in December 2011.*

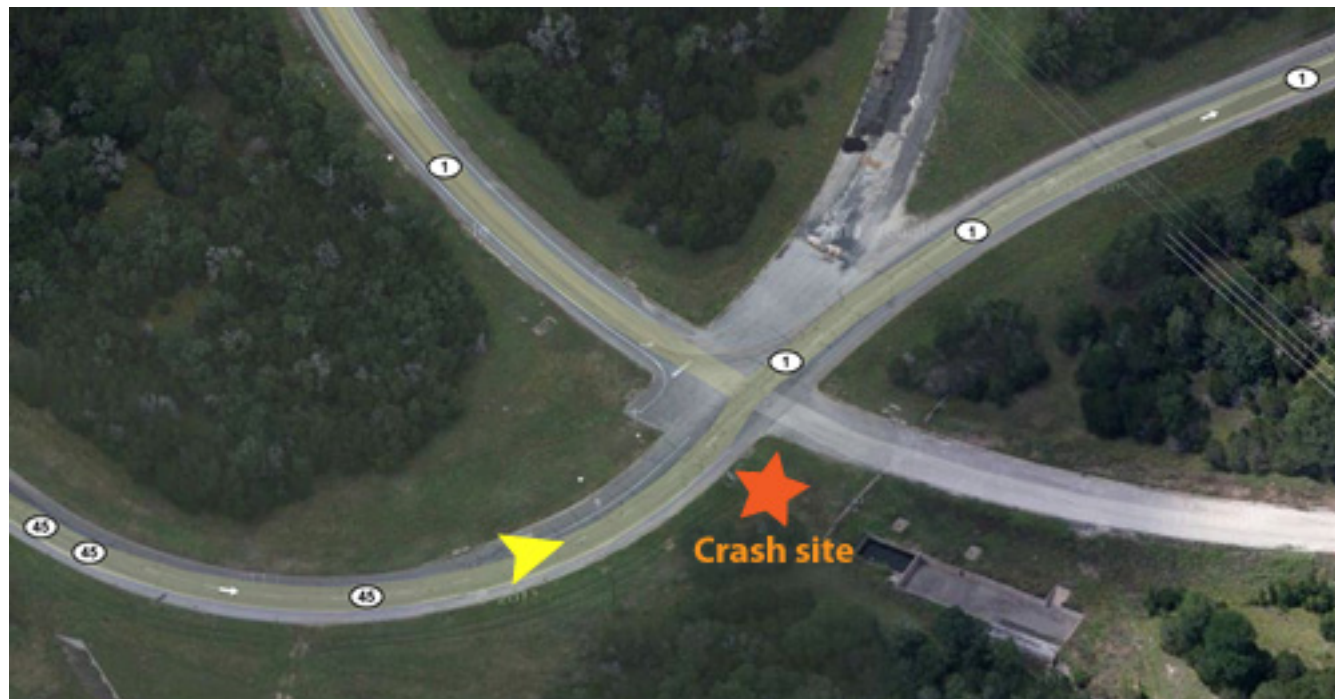
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*Mechanical Engineering*, taught by **Dr. Phil Schmidt**, he decided to study mechanical engineering and received his Bachelors of Science degree in 2000 with a concentration in Dynamic Systems and Controls.

## A Masters Degree

As an undergraduate, he did an internship with Boeing in St. Louis, and that spurred his desire to attend graduate school when he became interested in their Advanced Manufacturing Research and Development team that was working in robotics. He began working on his Master's degree in 2001, with **Dr. Kris Wood** as a Research Assistant in his lab. His research topic involved embedding sensors within a single layer of the [Selective Laser Sintering \(3D printing used for rapid prototyping\) process](#).



Top: Aerial view of the intersection where Moss crashed his motorcycle at 70 mph on a hairpin curve.  
Bottom: View of the turn from 45. The crash spot was on the outside of the main curve. He hit the concrete curb and rolled up onto the grass.

## The Wreck

By 2001 Moss and Carrie were engaged and planning a big wedding in May 2002. Moss had recently discovered the thrill of riding motorcycles. Even now, he describes himself as a "recovering adrenaline junkie." He never actually raced, but became involved in social riding clubs where members rode long distances, sometimes as much as 300 miles a day, usually at a high rate of speed. On October 14, 2001, his life changed forever when he was leading a group of UT motorcyclists on a ride from Driftwood (Salt Lick Restaurant area) back into Austin. They were on 45 where it makes a sharp left-hand turn onto Loop One Mopac near the Lady Bird Johnson Wild Flower Center. The speed limit was 35 mph, so he warned the others that the curve was very sharp, but took it at 70 mph, anyway. Moss doesn't know why now, as he remembers nothing about it, but suspects he was showing off. His friends believe that when the bike angled down around the curve, the kickstand hit the pavement, causing the back wheel to come off the ground just enough to lose traction during the turn. He was sent skidding on his back into the curb at 70 mph, and then tumbled over the curve onto the grass. He hit the back of his head, in the cerebellum, the section of the brain directly in front of the brain stem. He was wearing a helmet and a brand new \$1,000 full-body leather suit. The helmet, the suit and an earlier surgery to his neck where additional bone had been grafted to his vertebrae saved his life, but he wasn't breathing when his friends first got to him. They quickly removed his helmet and were about to administer [cardiopulmonary resuscitation](#)

Aphasia

Ataxic Dysarthria

Texas Exes Teaching Assistant Award

Brazilian Jiu-Jitsu

Relson Gracie Academy

Kathryn Hayes, M.A., CCC-SLP, a former clinical instructor in the speech and hearing clinic, stated "*Moss was extremely hard-working and intelligent. He always worked diligently with his student instructors, and completed all outside assignments. His progress was excellent, and he never gave up on working toward his goals. I am very impressed with his success, and wish him the best of luck in his future.*"

(CPR) before EMS arrived, but he started breathing on his own. When the [STARFlight](#), Austin's air EMS team arrived, they cut off his new suit to begin treatment. The elapsed time from the 911 call to his arrival at Brackenridge Hospital was only 11 minutes.

## The Nightmare

Moss was taken to [Brackenridge Hospital's](#) Emergency Room, then transferred to the Intensive Care Unit and later, Intermediate Care during the next two and half weeks. He remembers nothing of the wreck, but does remember snippets of what followed. He describes the first several weeks as being stuck in a nightmare where time did not make sense. He felt like he couldn't wake up and thought he was in a nursing home. Although totally confused, he wasn't completely unaware of his surroundings. His mother came to see him, and Carrie was there all the time, everyday, for the next two months. He spent seven and a half weeks in a [coma](#). It isn't like the movies, where one day the patient just wakes up and everything is fine. It's a slow process to wake up, going in and out of consciousness. He remembers he had broken his left arm and it was in a cast. He remembers that the tube in his throat from the tracheotomy hurt. It was all a miserable, confusing, painful blur.

## The Long Road Back

While Moss was in the coma, Carrie canceled their wedding, since nobody knew if he'd live or die. He was transferred from Brackenridge to the [Brown School \(Texas NeuroRehab Center\)](#) and was released on January 2, 2002. When Moss left in a wheelchair, nobody but Carrie could understand what he was saying. His speech and motor skills were severely affected. He still suffers from double vision, has a hard time writing and drawing, and people often think he's drunk because his gait isn't quite normal. Although he no longer walks with a cane, he still uses one in public places such as airports, so people won't think he's drunk and try to have him arrested. He had to learn how to speak again and was in speech therapy until 2006.

### Learning to Walk

It took a year to learn to walk again— graduating from the wheelchair to a walker to a cane. He did his speech therapy at the [UT Speech and Hearing Clinic](#) and reports they did an excellent job. His speech is greatly improved. When asked how he was able to make such an amazing recovery compared to other head-injury victims, he explained that it had a lot to do with the actual nature of the accident.

### Learning to Talk

Normally, in a head injury, the brain hits the cranium multiple times, but in his case, that didn't happen because the helmet cushioned any rebound. His brain didn't ricochet side-to-side. Since he hit the [back of his head \(the cerebellum\)](#), his frontal lobe (the part of the brain that controls emotions, personality and learning) remained intact. The cerebellum controls movement, speech, muscle movement, balance, and the ability to walk, talk and eat. He didn't have a cognitive loss of intelligence or a change to his personality, so common with head trauma. He developed a speech condition known as [aphasia](#), which refers to problems with language understanding, retrieval and expression. Aphasia impairs a person's ability to process language, but does not affect intelligence or behavior. Moss's aphasia is much improved, but he still has and always will have [ataxic dysarthria](#), a motor speech disorder resulting from neurological injury to the motor control system. It presents in different ways, and may include difficulty with timing, breathy or harsh voice quality, breath control, speed, strength, volume, steadiness or range of the voice.

### The Suit and Surgery That Saved Him

The leather suit helped, too. His skin was protected from road abrasion, which saved him from excruciating pain in recovery, allowing his body to expend more energy toward his cognitive recovery instead of pain. The earlier surgery had strengthened his neck. He already had limited range of motion in his neck, but it was strong enough not to break his neck on impact. The injury didn't affect his ability to excel in math and engineering, so as he recovered, he was able to function intellectually at his previous level.

## Marriage

In 2002 while receiving outpatient therapy, Moss stopped taking classes for a while but continued working in Dr. Kris Wood's research lab doing low-level research activities as no one held out much hope for his recovery. In May of 2002, he and Carrie eloped to Spain and were married one day before the original wedding date. Four years later, their first child was born.

## The Ph.D.



Top: Moss and Carrie on a boat in 2009.

Bottom: Moss holding their infant daughter, 2011.

technique.

## The Future and a New Job

Just today he accepted a teaching position. Moss reports, "I will be an adjunct faculty member in Austin Community College's pre-engineering program for the spring semester." He is still looking for a permanent teaching and/or research position at a smaller university or a national research laboratory. With his excellent grades, strong work ethic, the support of his family and a proven gift for teaching, the future looks awfully bright. The department wishes Moss, Carrie and their children profound success and happiness as they embark on the next leg of their journey on that long and winding road ahead.

Moss began work on his Ph.D. in 2003. Because of the injury and a search for a funded research project of interest, it took a little bit longer than normal, but he was able to finally get his dream job working with **Dr. Eric Fahrenthold**. He worked as a Teaching Assistant in 2003, 04, 05 and 07, and received two teaching awards for his work. The first was in 2004, when he received the Outstanding Teaching Assistant award for his work in the Dynamic Systems and Control Lab, and the second was in 2007, when he received the **Texas Exes Teaching Assistant Award** in Engineering for his work teaching Design Methodology.

## Martial Arts

Moss, still the "recovering adrenaline junkie" no longer rides motorcycles because he promised Carrie he wouldn't, but he trains in the martial art, **Brazilian jiu-jitsu**. Before his injury he was a brown belt in Taekwondo, a martial art that loosely translates to the "art of kicking and punching." He can't do that any longer, so he now trains at the **Relson (pronounced Helson) Gracie Academy in South Austin**. Brazilian Jiu-Jitsu focuses on grappling and ground fighting, and teaches that a smaller, weaker person can successfully defend against a bigger, stronger assailant by using leverage and proper

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