Brian Fehrman

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Work History:

- CSC Teaching Assistant, SDSMT, Rapid City, South Dakota (2012 – present)
- Research Engineer, SDSMT Advanced Dynamics Lab, Rapid City, South Dakota (2007 – 2012)
- Retail Associate, Sam's Club, Rapid City, South Dakota, (2002 – 2007)

Education:

- M.S. CSR South Dakota School of Mines and Technology, Rapid City, SD 2014
- M.S. M.E. South Dakota School of Mines and Technology, Rapid City, SD 2012
- B.Sc. CSC South Dakota School of Mines and Technology, Rapid City, SD 2010
- Minor Math South Dakota School of Mines and Technology, Rapid City, SD 2010

Background:

- **Time Reversal Acoustics**: Successfully performed time reversal signal processing to focus of acoustic stress wave energy in rods of varying media.
- **Extensive Programming**: Possesses programming knowledge that is both broad and deep which allows for using the right software tool for the job and converting code between different languages such as Matlab, C++, C#, LabVIEW, and others.
- **FGPA Data Acquisition**: Has written many programs that efficiently harness the speed and reliability of FPGA data acquisition cards.
- **Circuit Boards**: Personally designed and milled circuit boards with many hours logged on the CNC milling machine which cuts down costs of outsourcing fabrication.
- **Custom Animation**: Created a variety of computer animation programs to better help convey concepts and ideas about different lab projects.
- **Mobile Development**: Developed simple games for the android platform.

Recognition / Honors:

- 3rd Place, South Dakota School of Mines Student Research Competition, May 2010, topic of *Self-Healing and Acoustic Time Reversal Focusing*
- Recipient of a 2011 NASA SD Space Grant Award in the highest amount.

Professional:

- Member of Triangle Fraternity 2008-Present
- Member of Association for Computing Machinery 2008-present
- Member of American Institute of Aeronautics and Astronautics 2009-present
- Member of SPIE 2009-Present
- Member of IEEE 2010-Present

Selected Publications:

- **First Author –** *Targeted Delivery of Acoustic Energy for Self-Healing.* Submitted for review to the Journal of Intelligent material Systems and Structures. August 2012.
- **First Author –** *Iterative Time Reversal in Dispersive and Non-Dispersive Media.* Accepted for publication by AIAA and is to be presented at the 2012 AIAA 53rd Structures, Structural Dynamics, and Materials Conference.
- **First Author** - *Time Reversed Focusing in Finite-Length Rods with Defects.* Accepted for publication by AIAA and was presented at the 2011 AIAA 52nd Structures, Structural Dynamics, and Materials Conference.
- **Co-Author** - *Experiments on the focusing and use of acoustic energy to enhance the rate of polymer healing*. Accepted for publication by SPIE and was presented at SPIE 2011 Smart Structures Conference.
- **First Author** - *Using Focused Acoustic Excitation to Accelerate Crack Healing.* Published by AIAA and was presented at the 2010 AIAA 51st Structures, Structural Dynamics, and Materials Conference.
- **Co-Author –** *Electrostatic control with discrete area variation for beam steering and focusing using membrane mirrors.* Accepted for publication by SPIE and was presented at SPIE 2010 Smart Structures Conference.