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*****Michael D. Stiber (Ph.D., UCLA, 1992)*

Associate Dean, [School of Science, Technology, Engineering, and Mathematics](https://web.archive.org/web/20141028200920/http:/www.uwb.edu/stem/)  
Professor and Interim Chair, [Computing & Software Systems Division](https://web.archive.org/web/20141028200920/http:/www.uwb.edu/CSS/)  
Principal Investigator, [Biocomputing Laboratory](https://web.archive.org/web/20141028200920/http:/depts.washington.edu/biocomp/)  
Founding Faculty Member

Dr. Stiber received a BS in [Computer Science](https://web.archive.org/web/20141028200920/http:/www.cs.wustl.edu/) and a BS in [Electrical Engineering](https://web.archive.org/web/20141028200920/http:/www.ee.wustl.edu/) from [Washington University, Saint Louis](https://web.archive.org/web/20141028200920/http:/www.wustl.edu/), in 1983, and his MS and PhD in [Computer Science](https://web.archive.org/web/20141028200920/http:/www.cs.ucla.edu/) from the [University of California, Los Angeles](https://web.archive.org/web/20141028200920/http:/www.ucla.edu/). He has held positions with [Texas Instruments](https://web.archive.org/web/20141028200920/http:/www.ti.com/) (Dallas, Texas), Philips (Eindhoven, Netherlands), and the [IBM](https://web.archive.org/web/20141028200920/http:/www.ibm.com/) Los Angeles Scientific Center. He has been an Assistant Professor in the [Department of Computer Science](https://web.archive.org/web/20141028200920/http:/www.cs.ust.hk/) at the [Hong Kong University of Science & Technology](https://web.archive.org/web/20141028200920/http:/www.ust.hk/), a Research Assistant Professor in the [Department of Molecular and Cell Biology](https://web.archive.org/web/20141028200920/http:/mcb.berkeley.edu/) at the [University of California, Berkeley](https://web.archive.org/web/20141028200920/http:/www.berkeley.edu/), a Visiting Associate Professor in the [Electrical & Computer Engineering Department](https://web.archive.org/web/20141028200920/http:/www.ece.ufl.edu/) at the [University of Florida](https://web.archive.org/web/20141028200920/http:/www.ufl.edu/), and a frequent visitor to the [Department of Biophysical Engineering](https://web.archive.org/web/20141028200920/http:/www.bpe.es.osaka-u.ac.jp/Welcome.eng.html) at [Osaka University](https://web.archive.org/web/20141028200920/http:/www.osaka-u.ac.jp/) ([Japan](https://web.archive.org/web/20141028200920/http:/www.ntt.jp/japan/map)). He is a past member of the executive committee of the [Seattle section](https://web.archive.org/web/20141028200920/http:/www.ieee-seattle.org/) of the [IEEE Computer Society](https://web.archive.org/web/20141028200920/http:/www.computer.org/), has served on organizing committees, chaired sessions, and reviewed papers for neural network and computational neuroscience conferences, and is a reviewer for *Biological Cybernetics*, *Physica D*, *Neuroscience*, *The Journal of Computational Neuroscience*, the *Bulletin of Mathematical Biology*, the National Institutes of Health, and the US and Swiss National Science Foundations.

**Research Interests (**[**non-technical overview**](https://web.archive.org/web/20141028200920/http:/faculty.washington.edu/stiber/nontech-overview.shtml)**)**

Scientific data visualization and management; computational neuroscience; biocomputing; bioinformatics; biotechnology and biomedical technology; neuroinformatics; distributed information systems; simulation; scientific computing; neural networks; autonomous systems; computer graphics; computer vision; nonlinear dynamics; complex systems.

*"So what is this mind of ours: what are these atoms with consciousness? Last week's potatoes! They now can remember what was going on in my mind a year ago --- a mind which has long ago been replaced."*

*Richard P. Feynman*

My *long-term* research goal is to understand the computational principles underlying biological nervous system function for application to machine intelligence. Involved in this investigation include issues of computational neuroscience, artificial intelligence, neural networks, bioinformatics, nonlinear dynamics, robotics, scientific computing, scientific visualization, and collaborative computing.

In the nearer term, I wish to determine how neuron structural and behavioral complexity (small-scale dynamics) contributes to nervous system operation (large-scale behavior), such as in learning and sensorimotor systems.

My collaborators and I have been investigating information transfer across the synapses that connect nerve cells. This *synaptic coding* process is the functional unit of nervous systems, and as such the computational unit of neural networks. Part of my recent work has focused on the interaction between stochastic events ("errors", e.g., synaptic transmission failure) and neuron dynamics and the implications of this for synaptic coding.

I have also been working recently on modeling the growth and activity of biological neural networks grown *in vitro*. These *dissociated cortical tissue* preparations are viewed, on the one hand, as potential "neuro-electronic hybrid computers" and, on the other, as models for epilepsy. I hope that my work will explain why these networks show pathological bursting activity and how to stop this bursting and get them to behave like normal neural tissue.

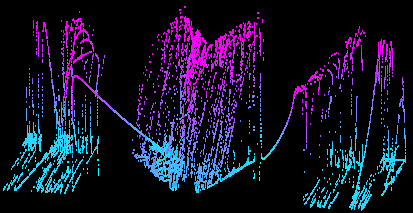
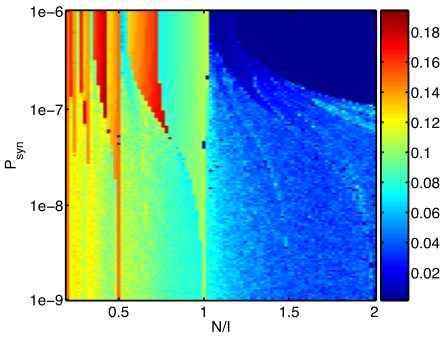
My methods have been based on the hypothesis that single neurons perform nontrivial operations, and that the coding of neural input to output can be understood if one views the neuron as a nonlinear dynamical system. This has involved very enjoyable collaborations with neuroscientists, mathematicians, and physicists.

**Teaching Interests**

As a founding faculty member here at UWB, and a near-founding-faculty member at HKUST, I have been involved in the development and teaching of a broad cross-section of the computer science core, as well as a range of upper-level undergraduate and graduate electives. Subjects I have taught include: introductory, medium-level, and advanced programming, programming tools, object-oriented design, data structures and algorithms, discrete mathematics, calculus, technical writing for software professionals, computer graphics, computer vision, visualization, multimedia, computer architecture, artificial intelligence, neural networks, complex systems, signal processing, and expert systems.

I have been involved in four recent and ongoing teaching initiatives:

1. Initiation of the [Master of Science in Computing and Software Systems](https://web.archive.org/web/20141028200920/http:/www.uwb.edu/mscss) degree.
2. Developing a "signal computing" course as the CS counterpart of signal processing (supported by the National Science Foundation under Grants No. 0443118 and 0816701).
3. Redesigning my expert systems class to become an introduction to rule-based systems as components within larger, enterprise systems.
4. UWB faculty members [Steve Collins](https://web.archive.org/web/20141028200920/http:/faculty.washington.edu/swcollin/), [Alan Leong](https://web.archive.org/web/20141028200920/http:/faculty.washington.edu/leonga/), and I have founded the [UW Bothell Biotechnology and Biomedical Technology Institute](https://web.archive.org/web/20141028200920/http:/www.uwb.edu/bbti/), which will house research, community, industry, and government outreach, and an inter-programmatic minor (supported by a UWB Worthington Academic Distinction Award).

**Course Pages**

* [CSS 162 - Programming Methodology](https://web.archive.org/web/20141028200920/http:/courses.washington.edu/css162/stiber/)
* [CSS 263 - Programming and Discrete Mathematics](https://web.archive.org/web/20141028200920/http:/courses.washington.edu/css263/stiber/)
* [CSS 342 - Mathematical Principles of Computing I](https://web.archive.org/web/20141028200920/http:/courses.washington.edu/css342/stiber/)
* [CSS 343 - Mathematical Principles of Computing II](https://web.archive.org/web/20141028200920/http:/courses.washington.edu/css343/stiber/)
* [CSS 457 - Multimedia & Signal Computing](https://web.archive.org/web/20141028200920/http:/courses.washington.edu/css457/)
* [CSS 482 - Expert Systems](https://web.archive.org/web/20141028200920/http:/courses.washington.edu/css482/)
* [CSS 485 - Introduction to Artificial Neural Networks](https://web.archive.org/web/20141028200920/http:/courses.washington.edu/css485/)
* [CUSP 124 - Calculus I](https://web.archive.org/web/20141028200920/http:/courses.washington.edu/cusp124/stiber/)

**Old Course Pages**

* [CSS 301 - Technical Writing for Computing Professionals](https://web.archive.org/web/20141028200920/http:/courses.washington.edu/css301/stiber/)
* [CSSAP 442 - Advanced Programming Methodology I](https://web.archive.org/web/20141028200920/http:/courses.washington.edu/cssap442/stiber/)

**Links**

* [Mike Stiber's Home Page](https://web.archive.org/web/20141028200920/http:/faculty.washington.edu/stiber/)
* [Biotechnology & Biomedical Technology Institute](https://web.archive.org/web/20141028200920/http:/depts.washington.edu/bbti/)
* [Biocomputing Laboratory](https://web.archive.org/web/20141028200920/http:/depts.washington.edu/biocomp)
* [Center for Integrated Teaching, Learning & Scholarship](https://web.archive.org/web/20141028200920/http:/depts.washington.edu/csscts/)
* [NeuroGeek page](https://web.archive.org/web/20141028200920/http:/faculty.washington.edu/stiber/neurogeek.shtml) ([Australian mirror](https://web.archive.org/web/20141028200920/http:/ecco.bsee.swin.edu.au/resres/neurogeek.html))
* [Doodle MeetMe](https://web.archive.org/web/20141028200920/http:/www.doodle.com/stiber)
* [Selected (older) student projects](https://web.archive.org/web/20141028200920/http:/faculty.washington.edu/stiber/students)
* The [HKUST CSD](https://web.archive.org/web/20141028200920/http:/www.cs.ust.hk/) students kicked some butt in the [1996 ACM International Collegiate Programming Contest](https://web.archive.org/web/20141028200920/http:/www.acm.org/contest/). Check out the team's [home page](https://web.archive.org/web/20141028200920/http:/faculty.washington.edu/stiber/team), the [final standings](https://web.archive.org/web/20141028200920/http:/www.acm.org/contest/96/finals/standings.html), the [problem set](https://web.archive.org/web/20141028200920/http:/www.acm.org/contest/96/finals/problems.html), and a [slide show](https://web.archive.org/web/20141028200920/http:/www.acm.org/contest/slideshow/ss01.html).
* [My CV](https://web.archive.org/web/20141028200920/http:/faculty.washington.edu/stiber/cv.pdf)
* [View Michael Stiber's profile on LinkedIn](https://web.archive.org/web/20141028200920/http:/www.linkedin.com/in/stiber)
* [My Community of Science profile](https://web.archive.org/web/20141028200920/http:/myprofile.cos.com/mstiber)
* [My Academia.edu page](https://web.archive.org/web/20141028200920/http:/uwb.academia.edu/MichaelStiber)
* [Thoughts on Interdisciplinarity](https://web.archive.org/web/20141028200920/http:/faculty.washington.edu/stiber/interdisciplinarity.shtml)
* [Pacific NW Gardening Calendar](https://web.archive.org/web/20141028200920/http:/www.icalx.com/html/stiber/month.php?cal=Gardening)
* [Cascade Bicycle Club](https://web.archive.org/web/20141028200920/http:/www.cascade.org/)
* [My personal blog](https://web.archive.org/web/20141028200920/http:/expert-opinion.blogspot.com/)

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