

## IEEE-SPS and Connexions—An Open Access Education Collaboration

**A**s Al Hero describes in his “President’s Message,” the IEEE Signal Processing Society (SPS) is heartily embracing the concept of open access and joining a growing worldwide movement of concerned organizations and individuals who aim to democratize access to knowledge and educational materials. We at Connexions (cnx.org) are excited to embark with the IEEE-SPS on a major initiative to develop a critical mass of signal processing educational modules and courses that will be available for free access by anyone, anywhere, at any time. The materials will pass through a careful IEEE-SPS peer review that will earn them the imprimatur of the IEEE brand for quality and eventually will be available not just in English but also in a number of languages, including Spanish and Chinese.

The open access movement promises to fundamentally change the way authors, instructors, and learners interact worldwide. It takes inspiration from the open source software movement—GNU Linux and Firefox, for example—mixes in the powerful communication abilities of the Internet and the World Wide Web, and applies the result to teaching and learning materials like course notes, curricula, and textbooks. A now-familiar open access education project is MIT’s OpenCourseWare (mit.edu/ocw), which opens up access to a large portion of MIT’s course materials.

Connexions (cnx.org) is an open-source platform that enables authors, teachers, and learners to create, rip, mix, and burn learning materials, courses, and textbooks from a globally accessible,

open-access repository. In Connexions, anyone can create “modules” of information – smallish, LEGO block documents that communicate a concept, a procedure, or a set of questions. Connect several modules together to build a Web course, a textbook, or a complete curriculum of your choosing. Connexions strives to bring people back into the educational equation, in particular people who have been “shut out” of the publishing world, like K–12 teachers, scientists

**THE OPEN ACCESS  
MOVEMENT PROMISES TO  
FUNDAMENTALLY CHANGE  
THE WAY AUTHORS,  
INSTRUCTORS, AND  
LEARNERS INTERACT  
WORLDWIDE.**

and engineers out in industry, and people who do not read and write English. Now these individuals are able to participate not solely as consumers of educational content but as active contributors to a shared global repository of knowledge. Connexions also aims to reduce the time lag between producing learning materials and getting them into the hands of learners. This is particularly important in fast-moving areas of science and technology like signal processing. Moreover, Connexions enables instructors to rapidly customize and remediate Web courses and textbooks, course by course, or even week by week. Volunteers are translating Connexions’ existing modules and courses into a variety of different languages, including Spanish, Portuguese, Japanese, Chinese, Vietnamese, and Thai; many of these are our most popular.

Thanks to the fact that the Connexions founders and early adopters were signal processing faculty and SPS members, there is a strong extant signal processing foundation to build on. In this initiative, the SPS will take on the important organizational role of building a critical mass of open-access signal processing content at a number of levels, from high school through college to lifelong learning. Three project phases are envisioned. Focused prototype content is currently under development prior to the official project launch. This will be followed by an open call for contributions in early 2008. Finally, once the project has achieved critical mass, the SPS will work to identify and fill holes in the coverage and ensure the project’s sustainability. All content will be distributed under a Creative Commons “attribution” open license that enables the maximum possible use, reuse, and innovation by users worldwide. And all content will be semantically encoded in XML to maximize the opportunity for use in different contexts, including both Web and print (contributions in LaTeX and Microsoft Word will be accepted during the initial pilot period). A best practices document is being developed to make it easy for contributors to organize their module or course contributions.

While Connexions welcomes contributions from anyone, anywhere, the platform features a filtering layer and dedicated Web space (called a lens) that supports peer review and certification (see [cnx.org/lenses](http://cnx.org/lenses) for some initial examples). The SPS is currently developing a peer review and certification process for contributed materials that will earn them the imprimatur of

the IEEE brand for quality via the SPS lens. In addition to singling out exemplary signal processing educational content, the SPS lens will offer Web 2.0 social software features like a keyword tag cloud, discussion areas, and tools to track the worldwide impact of contributions.

The benefits of our collaboration for the SPS include extending its education footprint into K-12 and lifelong learning, enhancing its global outreach, providing IEEE members new

opportunities to both teach and learn, and enabling a new opportunity for IEEE-SPS brand recognition.

Everyone has knowledge to share. Contribute a two-page module on fast convolution or AR modeling, a set of interactive simulations, a tech note on a DSP application, the notes from your short course, or your out-of-print textbook (once you've secured the copyright from the original publisher). Translate a module into or out of another language. Volunteer to peer

review contributions for the SPS lens. Or just tell other people about this new opportunity to energize the signal processing community and knowledge base. Check up on our progress regularly at [IEEE.org/cnx](http://IEEE.org/cnx).

—Richard G. Baraniuk,  
C. Sidney Burrus,  
and E. Joel Thierstein  
Connexions  
[cnx.org](http://cnx.org)  
**SP**

from **THE EDITOR** continued from page 2

“Conference News” section for upcoming SPS-sponsored conferences.

SPS Chapters are our members' local link to the valuable resources available from the IEEE and SPS. Chapters across geographic regions organize seminars, workshops, and networking events to provide opportunities for members' professional development. Through the Distinguished Lecturer program, the SPS provides travel support for Chapters to invite well-known signal processing educators and authors to lecture at meetings. The “Chapter News” section updates readers about these lectures and other Chapter events around the world. It also provides a forum for Chapters to introduce their activities and share experiences. For example, readers can learn about the United Kingdom and Republic of Ireland Chapter, the Chicago Chapter, and the recently established Washington Chapter from the April 2007 issue and about the Northern Virginia Chapter and the annual Chapter chairs meeting from the May 2007 issue.

Similarly, the “TC News” section serves as a window for technical committees (TCs) to introduce their missions and activities to the SPS audience and to invite participation and contributions from the audience. In the three issues

published in the spring of 2007, readers can read about the Speech and Language Processing TC (April 2007), the Signal Processing Theory and Methods TC (April 2007), the Multimedia Signal Processing TC (May 2007), and the Image and Multidimensional Signal Processing TC (June 2007).

**THE OVERALL GOAL IS TO  
MAKE THE E-NEWSLETTER  
A GATEWAY FOR DIFFERENT  
UNITS OF THE SPS  
ORGANIZATIONS TO  
REACH OUT.**

The e-newsletter also provides updates on recent Ph.D. theses and books related to signal processing areas. Many of the entries are recommendations and contributions from our readers; I would like to say thank you for them. If you come across a recent thesis or book that is of interest to the *SPM* audience, please follow the instructions on the e-newsletter Web site to bring it to the attention of our e-newsletter team.

Last but not the least, the e-newsletter features many briefings and in-depth reports on recent initiatives, ranging from standardization

activities to technical trends, and industry development to education efforts. These contents have evolved into a combined section of “New Initiatives and Trends.” I would like to thank all who have contributed articles that are so fun to read. Your suggestions on timely topics and your article contributions are welcome!

As suggested by its name, *Inside Signal Processing*, the overall goal is to make the e-newsletter a gateway for different units of the SPS organizations to reach out, a cyber stop where students and professionals who are interested in signal processing can find out the latest happenings in this vibrant field. With dedicated efforts from our electronic production editor, Prof. Nitin Chandrhoodan, a more interactive Web-based system is under development to enhance readers' and contributors' experiences. You may have already tried out the pilot system when you receive this issue of *SPM*. I am very eager to hear your feedback, and sincerely invite you to contribute news and articles to the e-newsletter. **SP**

