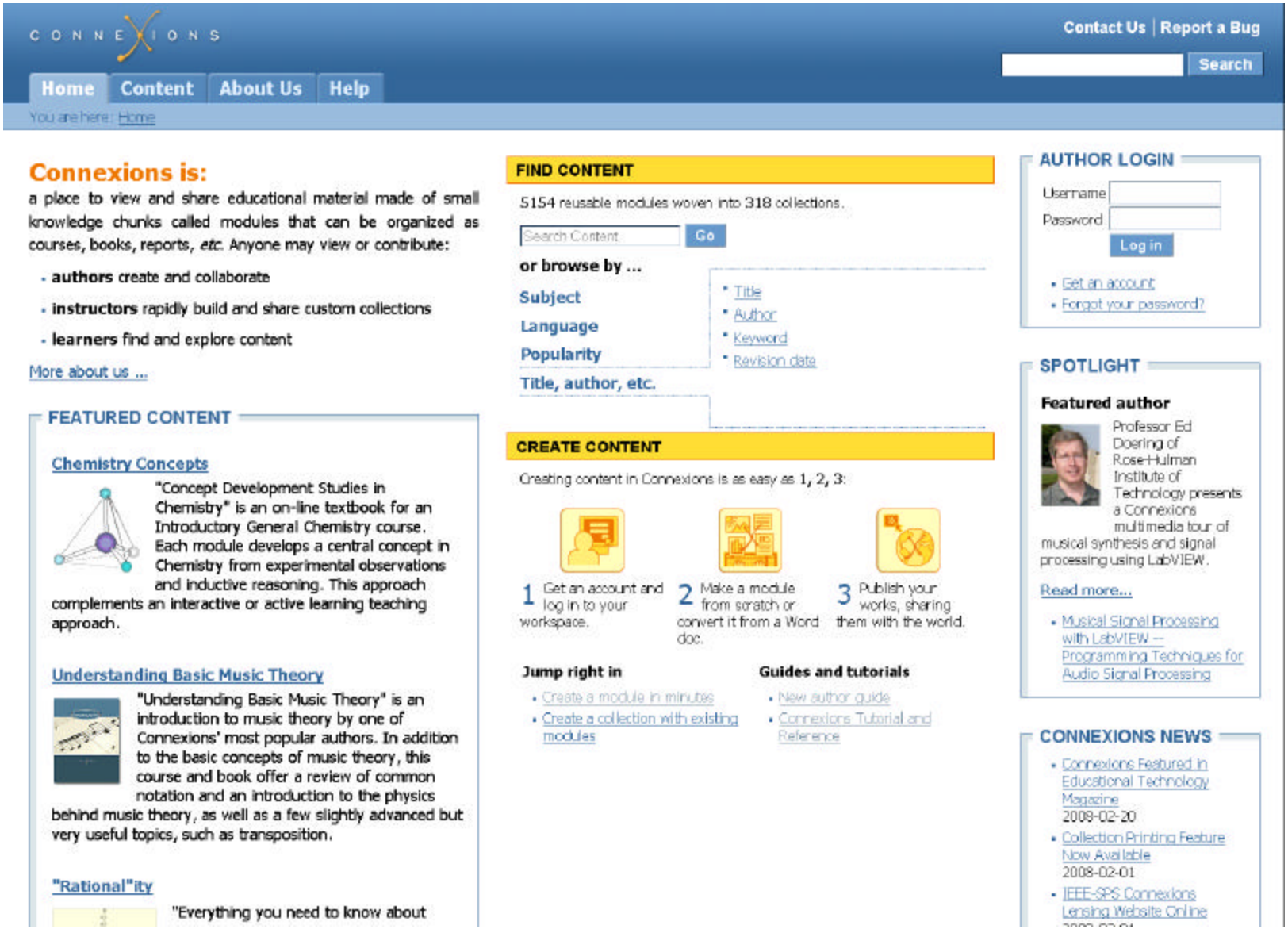
Create Globally,
Educate Locally

Connexions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Connexions is:
a place to view and share educational material made of small knowledge chunks called modules that can be organized as courses, books, reports, etc. Anyone may view or contribute:
• authors create and collaborate
• instructors rapidly build and share custom collections
• learners find and explore content
More about us ...
FEATURED CONTENT
Chemistry Concepts
"Concept Development Studies in Chemistry" is an on-line textbook for an Introductory General Chemistry course. Each module develops a central concept in Chemistry from experimental observations and inductive reasoning. This approach complements an interactive or active learning teaching approach.
Understanding Basic Music Theory
"Understanding Basic Music Theory" is an introduction to music theory by one of Connexions' most popular authors. In addition to the basic concepts of music theory, this course and book offer a review of common notation and an introduction to the physics behind music theory, as well as a few slightly advanced but very useful topics, such as transposition.
"Rational"ity
"Everything you need to know about
FIND CONTENT
5154 reusable modules woven into 318 collections.
Search Content
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or browse by ...
Subject
Language
Popularity
Title, author, etc.
• Title
• Author
• Keyword
• Revision date
CREATE CONTENT
Creating content in Connexions is as easy as 1, 2, 3:
1 Get an account and log in to your workspace.
2 Make a module from scratch or convert it from a Word doc.
3 Publish your works, sharing them with the world.
Jump right in
• Create a module in minutes
• Create a collection with existing modules
Guides and tutorials
• New author guide
• Connexions Tutorial and Reference
AUTHOR LOGIN
Username
Password
Log in
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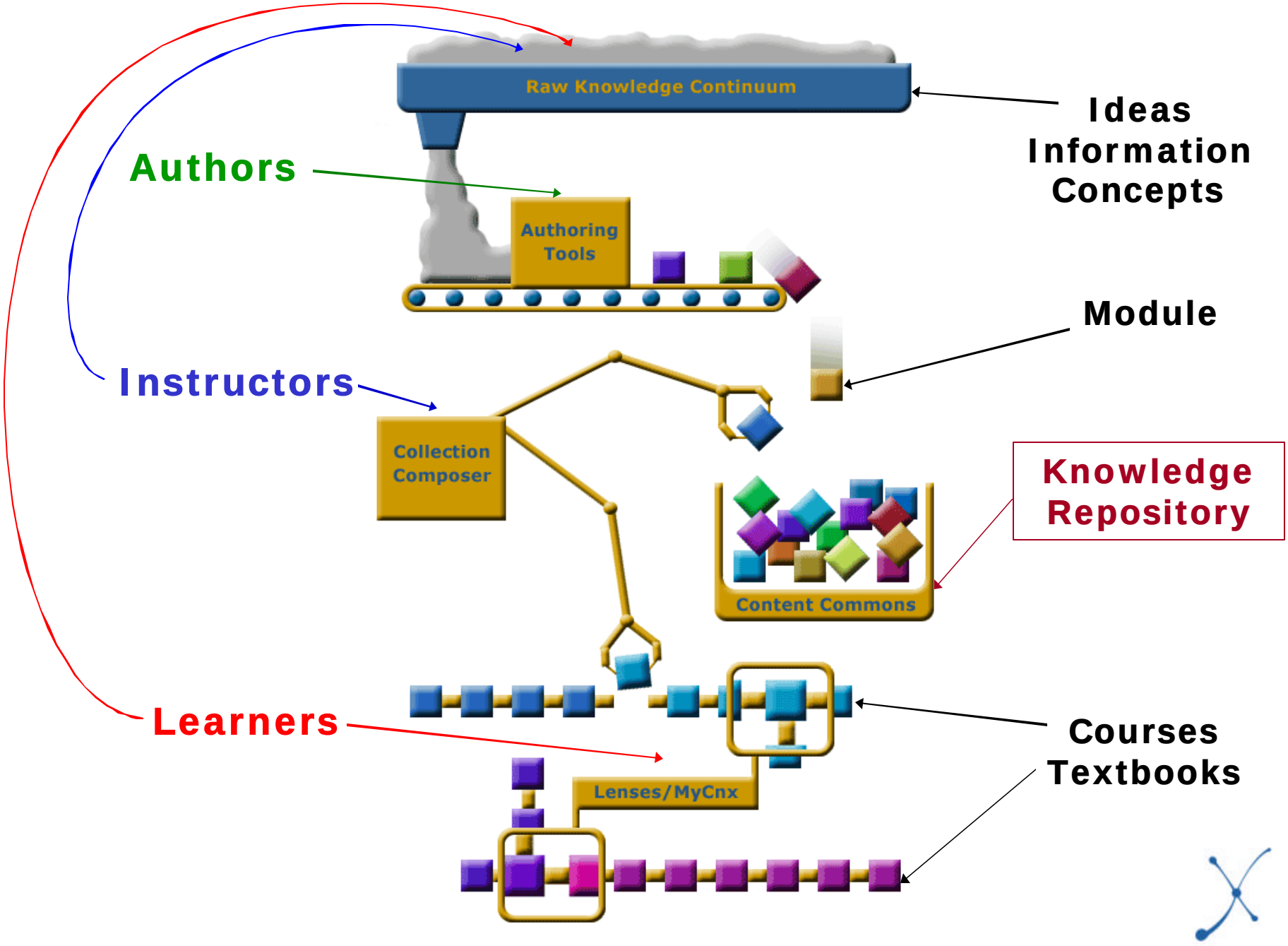
• Forgot your password?
SPOTLIGHT
Featured author
Professor Ed Doering of Rose-Hulman Institute of Technology presents a Connexions multimedia tour of musical synthesis and signal processing using LabVIEW.
Read more...
• Musical Signal Processing with LabVIEW -- Programming Techniques for Audio Signal Processing
CONNEXIONS NEWS
• Connexions Featured in Educational Technology Magazine
2008-02-20
• Collection Printing Feature Now Available
2008-02-01
• IEEE-SPS Connexions Lensing Website Online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Concepts
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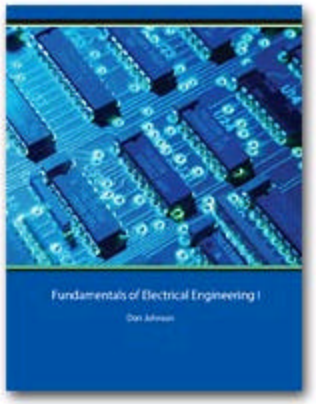

Fundamentals of Electrical Engineering I

by Don Johnson

This book focuses on the creation, manipulation, transmission, and reception of information by electronic means. Elementary signal theory; time- and frequency-domain analysis; Sampling Theorem. Digital information theory; digital transmission of analog signals; error-correcting codes.

About Connexions

Connexions is an environment for collaboratively developing, freely sharing, and rapidly publishing scholarly content on the Web. Our Content Commons contains educational material for everyone—from children to college students to professionals—organized in small modules that are easily connected into larger courses and collections. All content is free to use and reuse under the Creative Commons "attribution" license.

This book is brought to you by Connexions (cnx.org) at Rice University. You can read the latest version online at http://cnx.org/content/col10040/latest . Some online features may not be available in the printed version. Connexions provides free online access to collaboratively developed educational materials. If you would like to contribute to Connexions, please contact us at cnx@cnx.org.

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- LabVIEW Control Design Tutorial (TechTeach)

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- Control Systems Laboratory
- Fundamentals of Digital Signal Processing Lab
- What is Priority Control ?

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Courses using this content

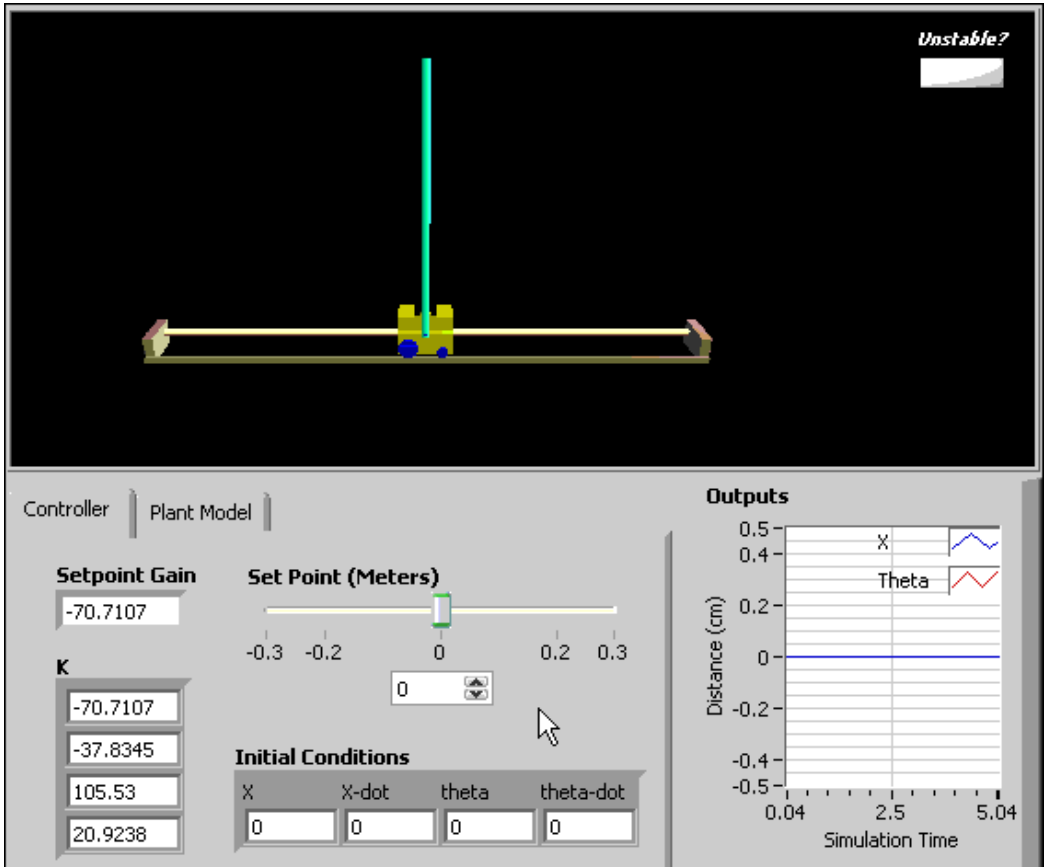
- Control Systems Laboratory

Inverted Pendulum on a Translating Base

Print (PDF)

By: ROBERT BISHOP

Summary: The objective of this lab is to understand the dynamics of an inverted pendulum with a translating base. Students will use feedback to control an unstable system. The controller will be designed and implemented in LabVIEW using the Simulation Module and Control Design Toolkit.



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FIR Filter Example

By: DON JOHNSON

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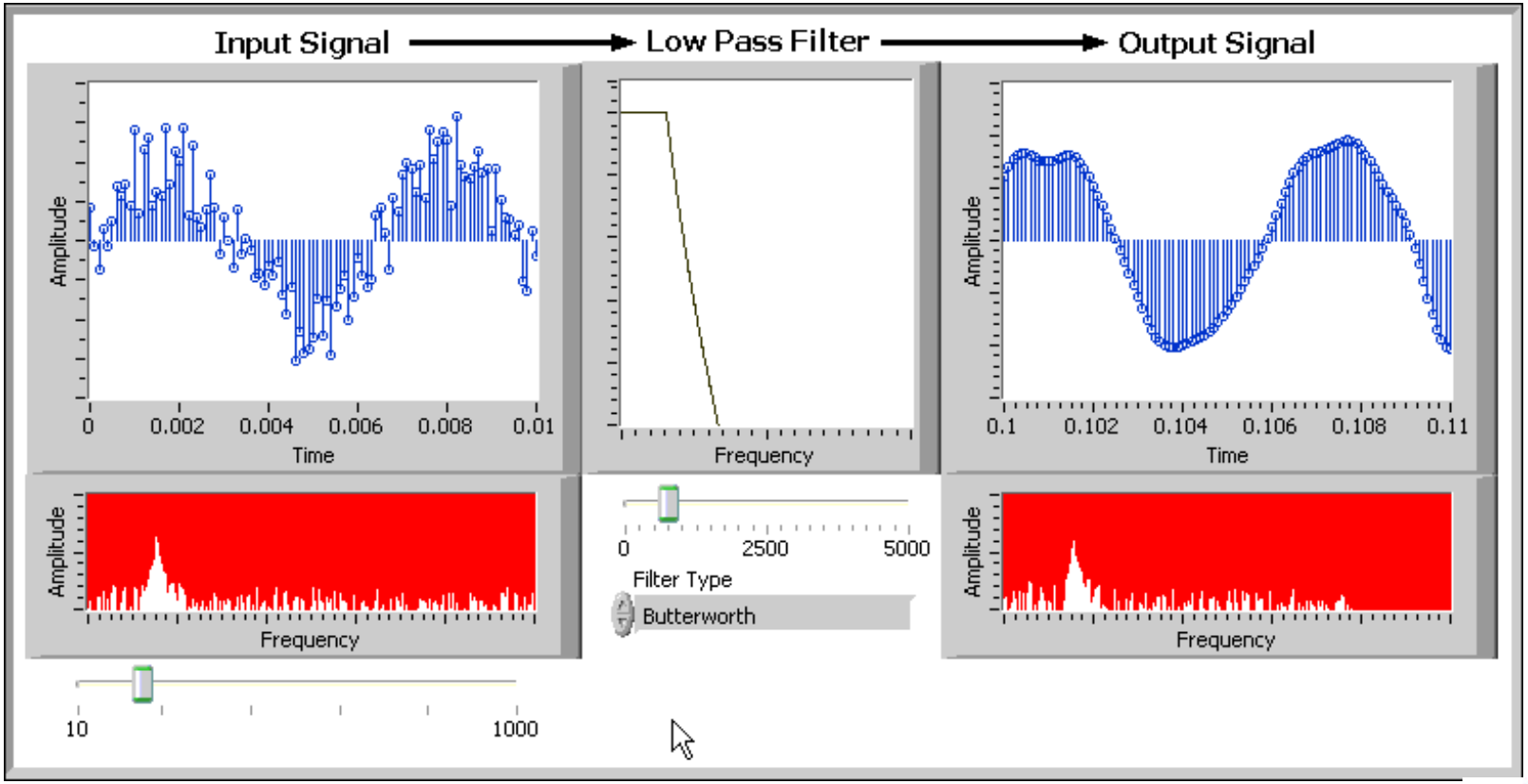
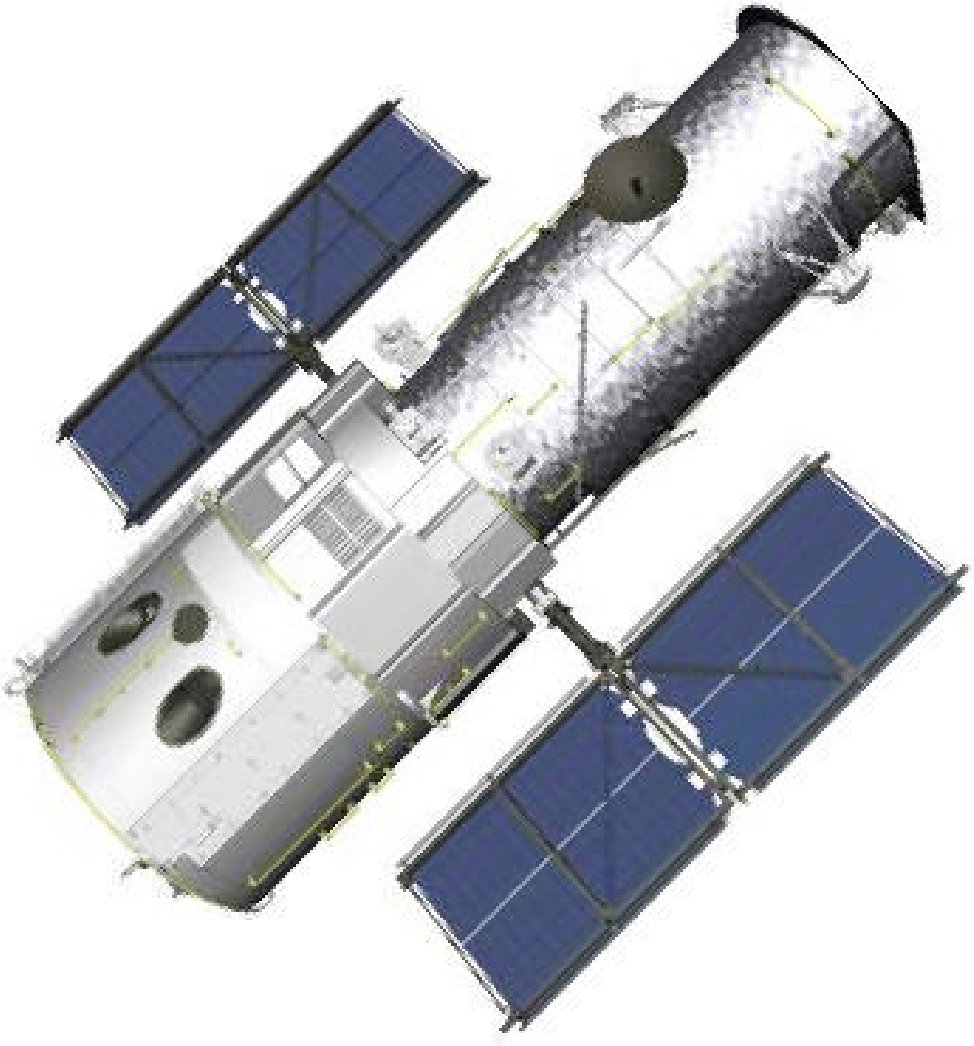
Summary: An example of using a Finite Impulse Response filter.



Control Quality



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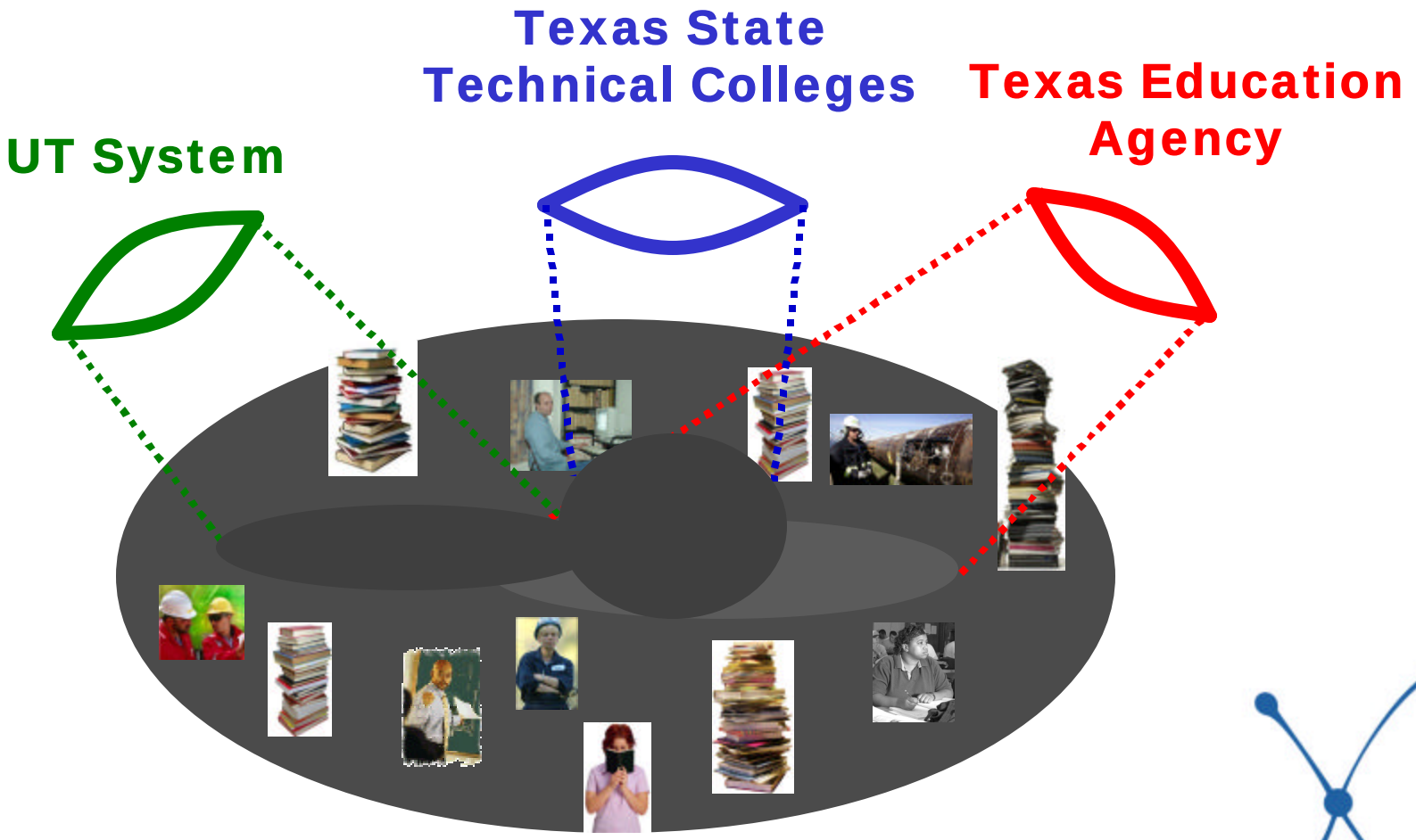
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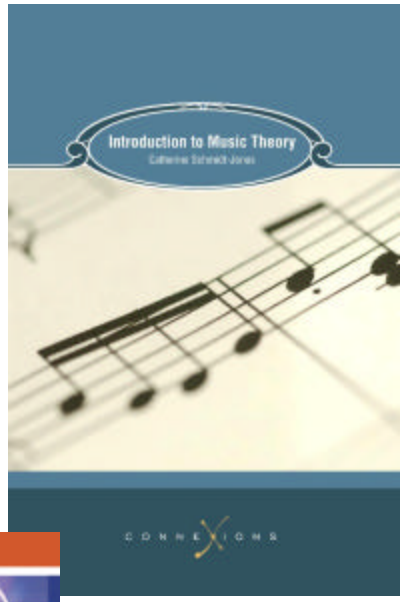

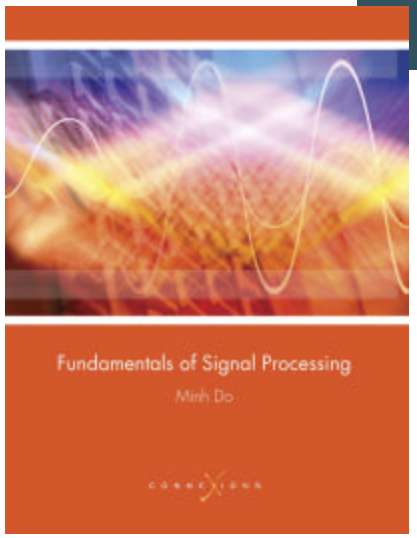

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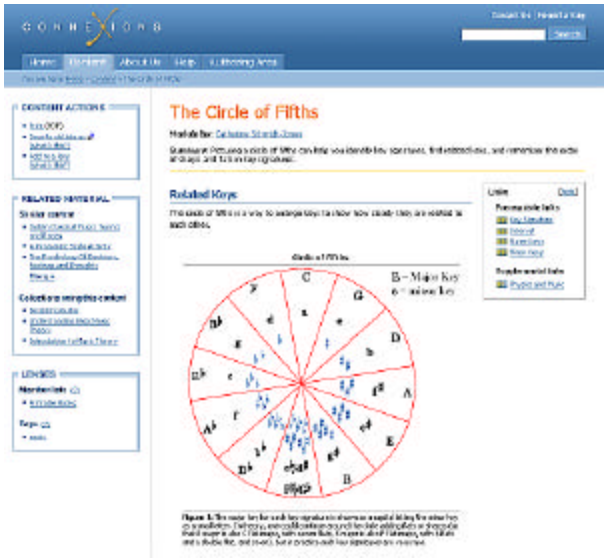

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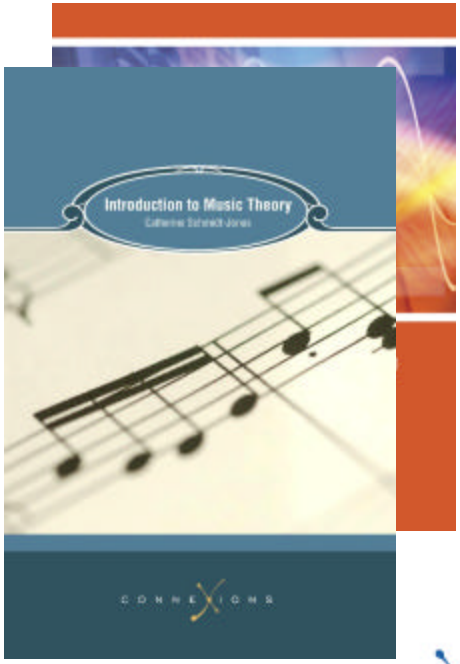

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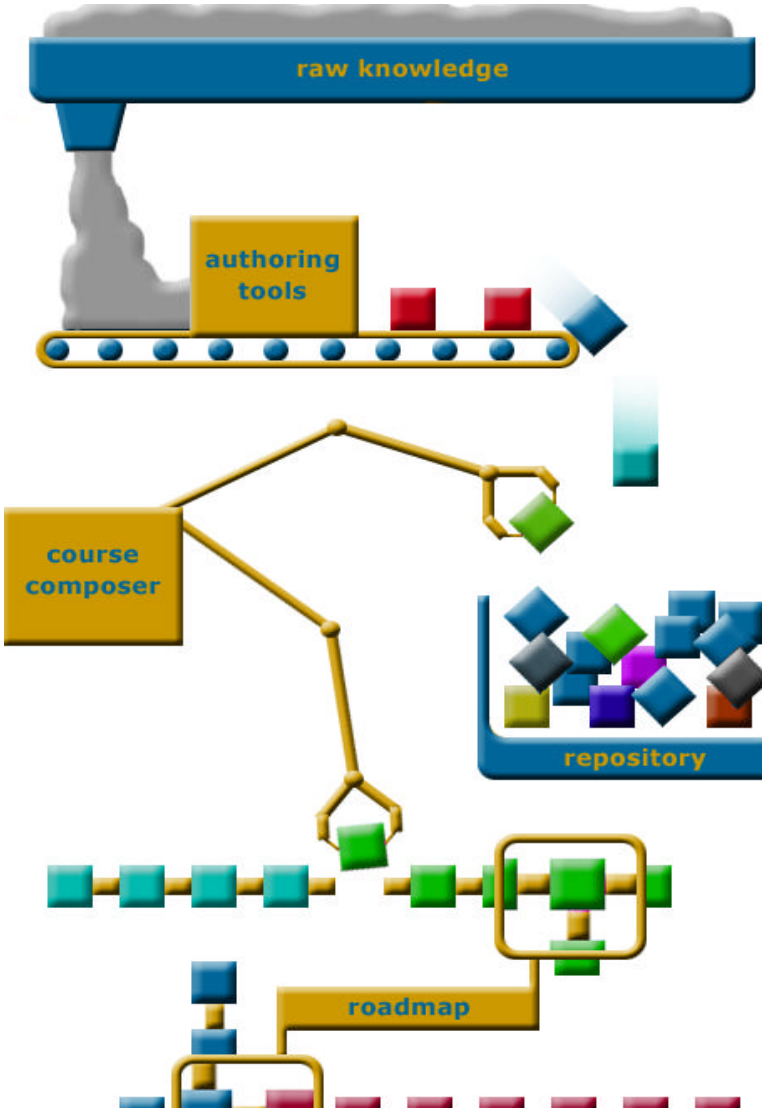
Joel Thierstein

Joel.Thierstein@cnx.org



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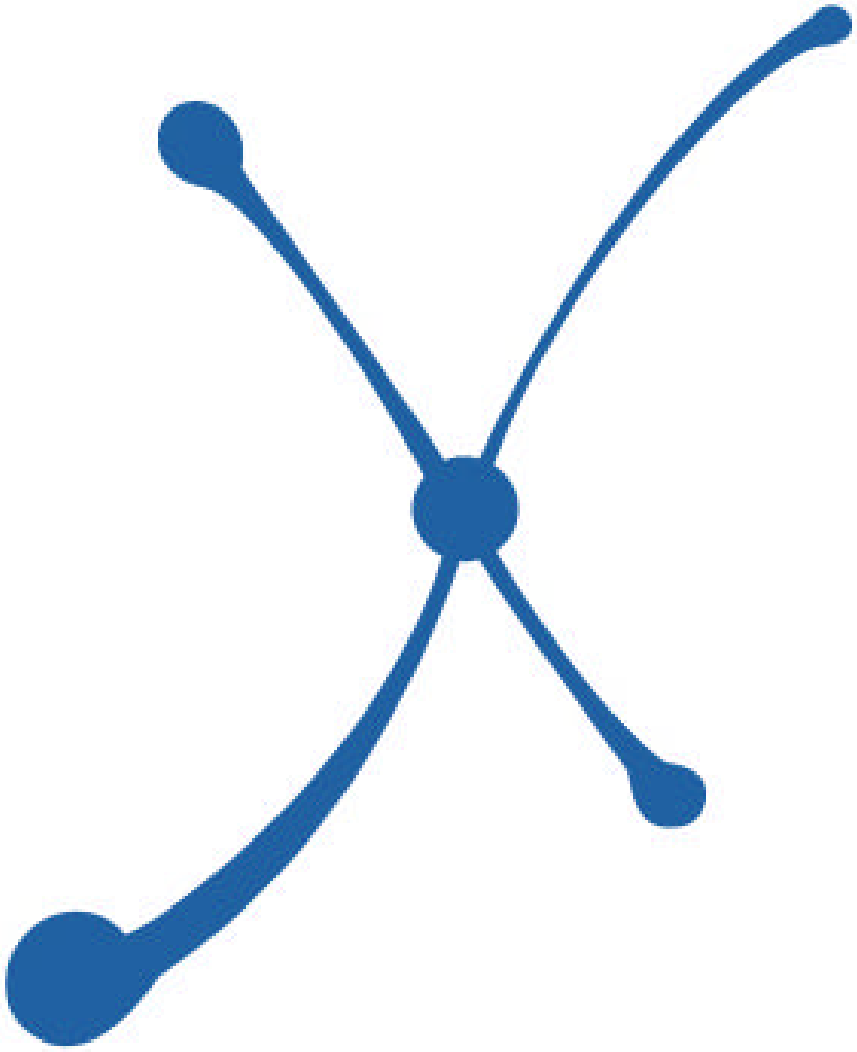

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Sharing Knowledge and Building Communities

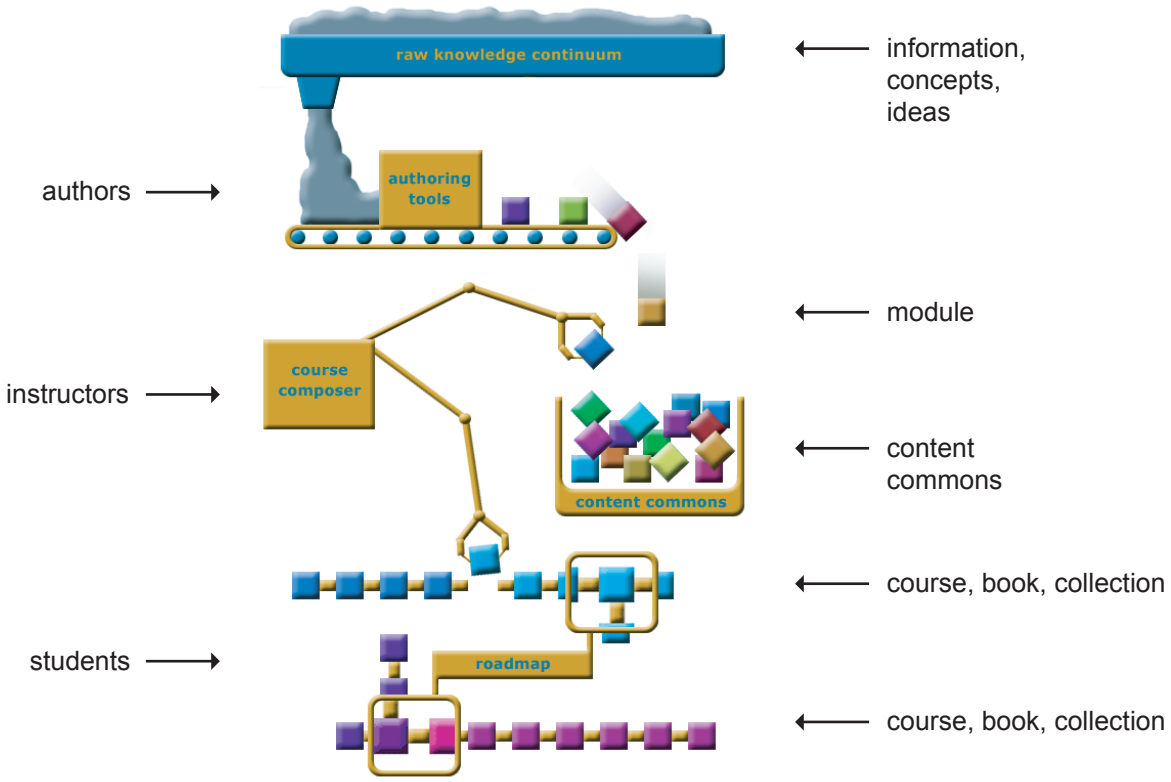
Knowledge is a dynamic continuum stretching across disciplines and constantly redefining educational boundaries. Recent technological advancements make it possible to develop and deliver quality, up-to-date educational materials that acknowledge this flow of interrelated concepts. With a community-driven, collaborative approach to creating and refining knowledge, education can be considered from new perspectives that ignite in students a love for learning.

What is Connexions?

Connexions is an open source/open content educational project that offers a fresh alternative to current modes of developing and sharing knowledge. In combination with powerful software tools, Connexions gives worldwide learners of any age free access to educational materials that can be readily explored and manipulated to suit individual learning styles. The free software tools also foster the development, manipulation, and continuous refinement of educational material by diverse communities of authors and teachers.

Connexions has been under development at Rice University since 1999 and is attracting the attention of a growing number of educators worldwide. Its hallmarks include:

- A *content commons* of diverse educational materials that span the knowledge continuum, are modularized for easy reuse, and are available free-of-charge to anyone in the world;
- Visualization and navigation of the "connexions" among concepts, courses, and curricula;
- High-quality materials, thanks to an iterative development process and an inherent quality assessment mechanism;
- Rapid, collaborative authoring of the materials by global communities of authors;
- Flexible, dynamic construction of customized courses and curricula, enabled by a coherent format (XML) and delivered in a variety of forms, from Web pages to e-books to paper texts;
- Separation of content and presentation for flexible customization of look and feel; and
- Content MathML for interfacing with advanced mathematical software packages.



Connexions is collaborating with Creative Commons (*creativecommons.org*) to develop its open-content licenses.

Visit the Connexions website at *cnx.org*

Connexions Software Tools

The Connexions architecture and software tools have been designed to support the development, management, and exploitation of the Content Commons. In a nutshell, the Connexions tools can be introduced using the "factory" analogy in the figure on the opposite page.

A global community of authors continuously converts "raw knowledge" from the continuum into small, self-contained modules of information, the equivalent of a page or two in a textbook. Modules can be imagined as special Web pages with hyperlinks pointing to prerequisites, applications, and supplementary material. Modules are placed in a database repository (the Content Commons) to be used, reused, updated, and adapted. Instructors use a Collection Composer software tool to weave modules into customized collections that can be placed on the web, presented in class, or printed as a paper text. Students and other learners access web collections or the repository directly using special visualization and navigational tools designed to highlight the non-linear "connexions" among concepts both within the same course and across courses and disciplines.

All software tools are free and open source licensed. The result is a coherent system for course development, organization, and delivery that mutually benefits students, instructors, and authors.

Connexions Content Projects

In Connexions, content is developed collaboratively by a community of authors under an open content license. All materials in the Content Commons are thus freely available to worldwide communities of authors who can collaboratively create, expand, revise, and maintain them.

This system has a number of advantages: it is cost effective and time efficient, lowers the barrier to entry into the author community and thus fosters diversity of opinion and subject matter, and increases the quality of the resulting materials.

As of September, 2008, the Connexions Content Commons contains more than 6,400 modules and 370 collections. These support one-third of the core undergraduate courses in the Rice Department of Electrical and Computer Engineering (ECE); Rice courses in computer science, bioinformatics, and mathematics; an ECE course at the University of Illinois at Urbana-Champaign; an ECE course at Ohio State University; two ECE courses at Cambridge University; music appreciation, music theory, and botany. Additional contributions have come from Georgia Tech and Polytechnic University. New material is being developed in emerging areas such as nanotechnology, history, and anthropology.

Connexions' major support has come from Rice University, the William and Flora Hewlett Foundation, the Maxfield Foundation, and the National Science Foundation. Connexions has also received support from National Instruments, Open Society Institute, the Hewlett Packard Corporation, Texas Instruments, the Vietnam Education Foundation, and the Class Foundation.

To get involved with Connexions, see the Web site or email cnx@rice.edu

cnx.org

RICE

Rice University is a private, independent institution dedicated to the advancement of letters, science, and art. It is located just a few miles from downtown Houston, Texas. With about 3,000 undergraduates and 2,100 graduate students, Rice is consistently ranked one of the top universities in the country. A small student/faculty ratio and top quality research program are hallmarks of Rice. *http://www.rice.edu*

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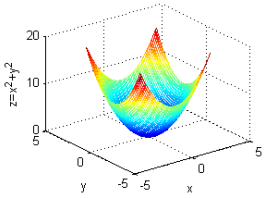
CONNEXIONS CONTENT EXAMPLES

Galileo's Telescope

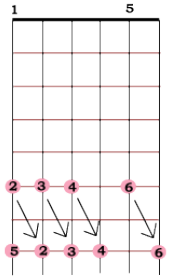
A brief history of Galileo's telescope, its predecessors, and the "telescope race" it inspired. In a 150 or so years, telescope makers like Galileo started with a collection of eyeglass components, solved several major technical hurdles (and discovered major physical principles in doing so), and ended up with the telescope design we still use today.

Freshman Engineering Problem Solving with MATLAB



This course, originating at Arizona State University at the Polytechnic Campus, is intended to introduce freshman engineering students to problem solving using an m-file environment, such as MATLAB, LabVIEW MathScript, Octave, etc. It is designed for the novice programmer, and covers the most commonly used features of the language.

Tuning Your Guitar



Different methods of tuning the guitar give slightly different results. Your preferred method will depend both on what is easy and convenient for you and on what you want the result to sound like. This module covers seven different techniques, including harmonics, pitch pipes, tuning forks, and intervals.

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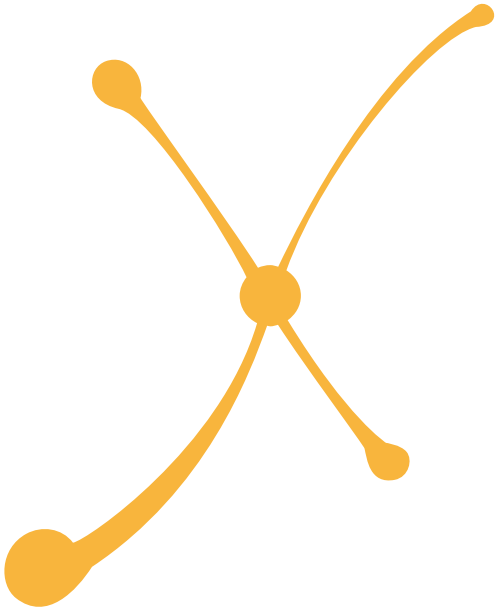

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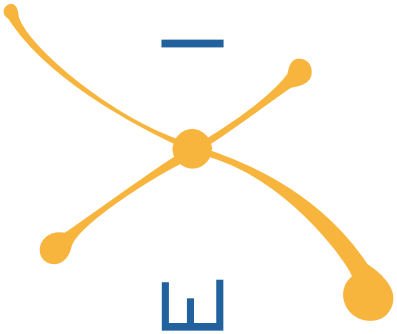

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FIND INFORMATION

Our brains are not linear

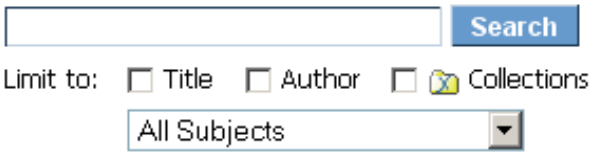
Information is often presented to us linearly, but the way we learn is most often by making connections between new concepts and things we already know.

Connexions links information together in unique ways that work for individual learners by serving content in two formats:

Modules: small "knowledge atoms"
Collections: groupings of modules

Finding the information you need is a snap. Go to http://cnx.org/content

Search for content:



... or ...

1. Browse:

- Subject
- Author
- Popularity
- Institution
- All Collections
- Title
- Keyword
- Language
- Revision Date

2. Refine: the parameters of the search
3. View: exactly the educational modules or collections you want to see

CREATE CONTENT

Authors create and collaborate, making the addition of information into Connexions as easy as 1, 2, 3

1. Go to http://cnx.org and set up an account. Log in to your workspace.

2. Create a module from scratch or convert it from a Word document.

3. Publish your work, sharing is with the world.

People don't live in a vacuum

Collaboration helps knowledge grow more quickly. Connexions promotes communication between content creators, advancing the possibilities for new ideas from which we all benefit.

ENDORSE CONTENT

Trusted sources / experts

Connexions' content filtering feature, Lens, enables both organizations and individuals to give a stamp of approval to reviewed content in the Connexions repository. Expert vetting of content allows user-driven quality control on Connexions modules and collections.

Clicking on a lens link (endorsement or affiliation) takes you to a page about the lens and the person or organization that created it. This page also lists other content in the specified lens.

To start creating, search for modules/collections or for more information, go to http://cnx.org

cnx0208A1