

3-1: Introduction to Content-Based Recommenders

Learning Objectives

- To understand the range and value of content-based approaches to recommendation
 - Pure information filtering systems
 - Case-based reasoning systems
 - Knowledge-based navigation systems
- To understand the strengths and drawbacks of content-based recommender systems

Basic Idea: Stable Preferences

- Let's consider some examples:
 - News – I prefer stories on technology, University of Minnesota, Minnesota Vikings, restaurant reviews
 - Clothing – I prefer cotton, blue, low-priced, casual
 - Movies – I prefer Tom Hanks, Sandra Bullock, Woody Allen, Comedy
 - Hotels – I prefer 24-hour front desk, room service, internet, pool

The key ideas

- Model items according to relevant attributes
- Model or reveal user preferences by attribute
- Voila! A Recommender

Content-Based Filtering

- Key concept: building a vector of attribute or keyword preferences
- Example: Krakatoa Chronicle
<http://www.w3.org/Conferences/WWW4/Papers/93>
Kamba, Bharat, and Albers (WWW '95)

Document URL: <http://homepark.cc.gatech.edu:8080/cgi-bin/oldHNews.pl?Read=Read+Last+Edition+of+Krakatoa+Chronicle>

Tuesday, April 26, 1995

1/20

Krakatoa Chronicle



density

dense

tendency

general

sensitivty

not very sensitive

P: Peek an article, S: Save an article to a scrapbook

Technical static fuzzes Europe's telecom networks

(c) 1995 The News & Observer Publishing Co.
(c) 1995 Bloomberg Business News

PARIS, April 26 (04-25-95) — With today's modems and telephone networks, sending data via telephone from a conference in Germany to your London office should be child's play, right?

Wrong.

Electric plugs differ from place to place. So do telephone connectors,

dial tones and the latest transmission standards. As business travelers can attest, a thicket of technical, regulatory and other hurdles must be cleared before Europe becomes a "plug-and-play" \$160 billion telecommunications market, as promised, by 1998.

It will have to be in place before doctors in Belgium and Germany

Interesting

Rogers executives resign as officers of Unitel Communications

(c) 1995 The News & Observer Publishing Co.
(c) 1995 Bloomberg Business News

Toronto, April 26 (04-25-95) — Rogers Communications Inc., which spurned a majority stake in long-distance telephone company Unitel Communications Inc., said three of its executives resigned as officers and directors of Unitel.

The three executives who resigned are Ted Rogers, Phil Lind and David Gergacz.

Rogers, who is president and chief executive of the cable-television operator, was Unitel's chairman, a post he had held since mid-January. Lind and Gergacz served as vice chairmen of Unitel.

Last week, Rogers Communications said it wouldn't exercise an option to buy a majority stake in Unitel. Toronto-based Rogers acquired the option in January from

No Comment

President will buy Wang stake and invest in a Shanghai plant

(c) 1995 The News & Observer Publishing Co.
(c) 1995 Bloomberg Business News

TAIPEI, April 26 (04-25-95) — President Technology Inc., a Taiwan computer maker and

software services concern, said it purchased the 49% of a Taiwan software concern it didn't already own from Lowell, Mass.-based Wang Laboratories Inc. for NT\$365

million (\$14.4 million).

The company, 19% owned by Taiwan food processor President Enterprises Corp. (1216 TT), also said it plans to invest NT\$100 mil-

lion in a computer monitor plant in Shanghai this year and double its capital to NT\$1.5 billion.

President Technology purchased

No Comment

R.R. Donnelley unit completes merger with Corporate Software

(c) 1995 The News & Observer Publishing Co.
(c) 1995 Bloomberg Business News

Chicago, April 24 (04-24-95) —

R.R. Donnelley & Sons said it has completed the merger of its

Interesting

Creative Technology, Aztech expand share of sound card market

(c) 1995 The News & Observer Publishing Co.
(c) 1995 Bloomberg Business News

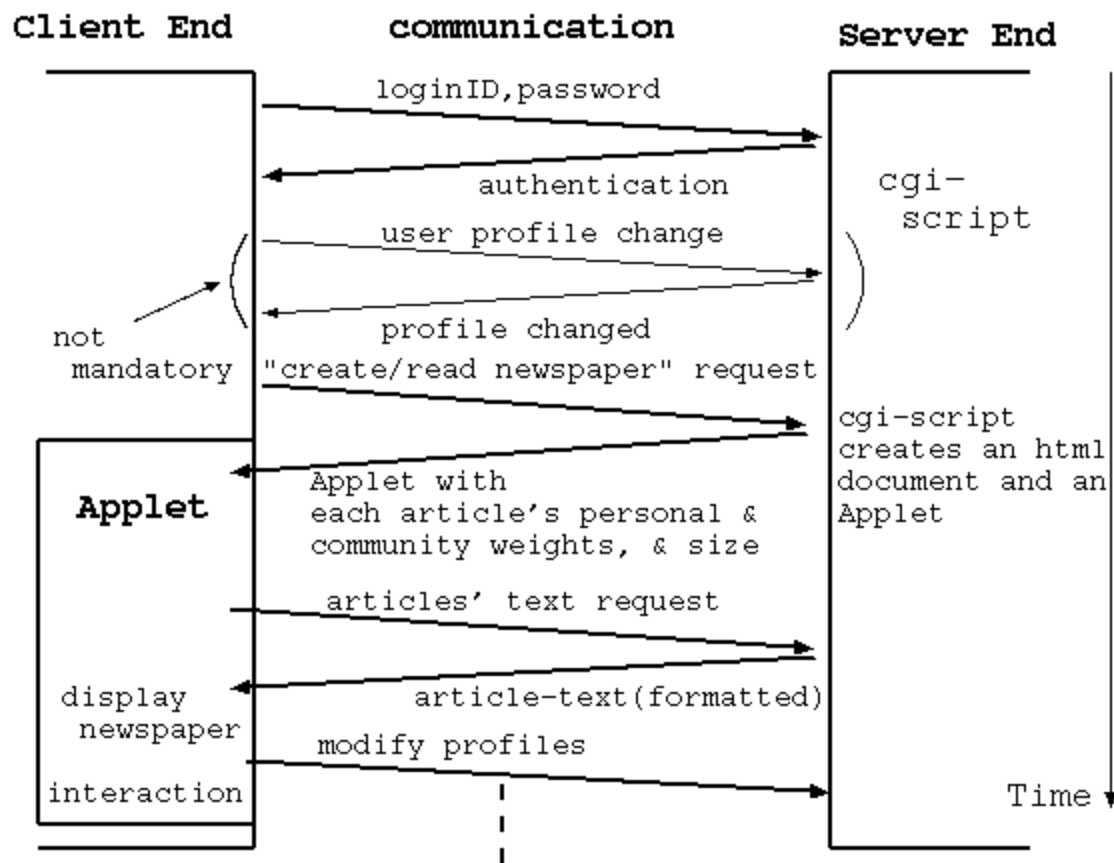
Singapore, April 25 (04-24-95) —

Creative Technology Ltd. and Aztech Systems Ltd. both expanded

Interesting



Complete



Wide range of Possibilities

- User could build own profile (awkward)
 - But allowing user to edit a profile can be valuable
- Infer profile from user actions
 - Read, Buy, Click
- Infer profile from explicit user ratings
 - How to map from item preference to attribute preference
- We merge actions/explicit into infer from ratings (explicit and implicit)

How to build preferences?

- Let's start with the idea of a set of “keywords” that users may like, dislike, or not have an opinion on
- We could simply count the number of times the user chooses (or fails to choose) items with each keyword
- Or we can get more sophisticated
- More to come (future lecture) ...

How to use preferences

- Given a vector of keyword preferences
 - Do we just add up likes and dislikes?
 - Can we figure out which keywords are more and less relevant?
- Forward reference: TFIDF

Content-Based Recommenders

- Our assignments will be based on this model
 - Hand exercises: building a profile and using it to predict a few cases
 - Programming exercise: building a content-based recommender
- But first, a few other approaches ...

Case-Based Recommendation

- The concept:
- Structure a database of cases around a set of relevant attributes (e.g., camera price, zoom, pixels)
- Query based on an example or attribute query, and retrieve relevant cases
- Open issue: Many ways to structure interaction

etown's Ask Ida

- No longer exists (old screenshots)
- Uses an interview process to elicit preferences over attributes
- Uses preferences to recommend products
- Uses recommendation as a point to elicit further preferences
- Note: not intended as permanent preferences – just transactional



etown.com™

Customer Service | Your Account | Shopping Cart

July 17, 2000

THE Consumer Electronics Source

Expert Advice, Comparison Shopping, Online Purchasing



Should I buy a digital (DV format) camcorder?

[click here](#)

Search

Products

Search

[Advanced Search](#)

News & Views

• This Just In

- [Dynamo shoes generate electricity](#)
- [Showtime phases in Dolby 5.1 sound](#)
- [EMI to vend pay-per-download songs](#)
- [Streaming A/V on your cell phone?](#)
- [Stephen King plans serial e-book](#)
- [Juno, Hughes team on Web-by-satellite](#)
- [Will Sony Palm unit hit U.S. by Xmas?](#)

[more...](#)

• New Reviews/Products

- [EXCLUSIVE: Toshiba 480p-out DVD](#)
- [Bush TV center has nice price](#)
- [Vidikron projector: 'an eye-opener!'](#)
- [Panamax nixes electrical spikes](#)
- [JVC boombox has stylish looks](#)
- [DSS security recommends AT&T phone](#)
- [EXCLUSIVE: Sharp DVD player](#)
- [EXCLUSIVE: Philips/TiVo recorder](#)
- [EXCLUSIVE: Outlaw 6.1 A/V receiver](#)

[more...](#)

• Features / Columns

- [Unclear on the THX concept?](#)
- [In the Mix: Did we ask for DVD-A?](#)
- [Don't miss our updated FAQ for DTV!](#)
- [Camcorder Corner: Fade to black](#)
- [How to set up your subwoofer](#)



Browse & Buy



Home Theater

[VCR Satellite DVD Receivers](#)
[Surround Separates Speakers](#)
[Packaged Systems Remotes](#)
[Accessories PVR](#)



Television

[Direct-View TV Rear-Projection TV](#)
[Front-Projection TV Flat-Panel TV](#)
[DTV/HDTV Personal TV TV/VCR](#)



Camcorders

[8mm Formats VHS Formats](#)
[DV Format Digital Cameras](#)



Home Audio

[CD Players Tape/Disc Recorders](#)
[Speakers Compact Systems Phono](#)
[Integrated Amps Stereo Separates](#)
[Accessories Multimedia Speakers](#)
[A/V Furniture](#)



Portable Tech

[Boomboxes Personal Cassette](#)
[Personal CD MiniDisc Palm PCs](#)
[Portable Radios Digital Cameras](#)
[MP3 Players Headphones](#)
[2-way Radios GPS](#)



Telecom

[Cordless Phones Cell Phones](#)
[Phone/Answering Combos Pagers](#)
[Corded Telephones Fax Machines](#)
[Answering Machines](#)



Accessories

[Remote Controls Audio Cables](#)
[Video Cables A/V Furniture Antennas](#)
[Cases/Bags Surge Suppressors](#)

top 10 best sellers

Summer Sale
 Name brand products at discount prices
 Great savings on every item!

Cambridge SoundWorks
 model 88 Table-Top Radio
 List Price \$249.99
Sale \$149.99

Sharp MDMS722
 Minidisc Portable Recorder
 List Price \$299.99
 Free Shipping!
\$169.70

JVC GR-DVM50
 Free Shipping!
 High Quality Low Price
 List Price \$1499.95
\$879.88

JBL PSWD 112
 Recommended \$179

The Top 10 best-selling items:



[Customer Service](#) | [Your Account](#) | [Shopping Cart](#)

July 17, 2000



Save Over 70%
Click Here

Categories

- [Home Theater](#)
- [Camcorders](#)
- [Home Audio](#)
- [Television](#)
- [Portable Tech](#)
- [Telecom](#)

News / Views

[This Just In](#)
[Reviews/Products](#)
[Features/Columns](#)
[Community Hall](#)
[Knowledge Bank](#)
[About etown.com](#)
[CE Links](#)

NEW EPISODE!



What is GPS?

Interactive Knowledge
Bank



Ida: Your Interactive Decision Assistant



Welcome!

I'm Ida, your interactive decision advisor. I can help you find the products that best suit your needs and preferences. I combine **etown.com's** expertise on consumer electronics with state-of-the-art artificial-intelligence techniques from **Ask Jeeves**. I think you'll find shopping for electronics can be easy and fun!

Select the product category you are interested in:

Home Theater

- ▶ [DVD Players](#)
- ▶ [A/V Receivers](#)
- ▶ [VCRs](#)

Home Audio

- ▶ [Compact Systems](#)
- ▶ [CD Players](#)

Portable Tech

- ▶ [Digital cameras](#)
- ▶ [Boomboxes](#)
- ▶ [Handheld/Palm PC](#)

Telecom

- ▶ [Cordless Phones](#)

Camcorders

- ▶ [8mm, VHS, and DV](#)



Search

Products ▾

Search

[Advanced Search](#)

QuickJump ▾



LIVE HELP

[CLICK HERE](#)
to chat with our
customer service



Customer Service
24 hours a day
7 days a week

Toll Free
877-GO-ETOWN

CHAT! with our experts

Audio Talk
Played LOUD!
with Michael Fremer
8pm Tuesdays



Change the way you think...

Categories

- [Home Theater](#)
- [Camcorders](#)
- [Home Audio](#)
- [Television](#)
- [Portable Tech](#)
- [Telecom](#)

News / Views

[This Just In](#)
[Reviews/Products](#)
[Features/Columns](#)
[Community Hall](#)
[Knowledge Bank](#)
[About etown.com](#)
[CE Links](#)

NEW EPISODE!



What is GPS?

Interactive Knowledge Bank



Ida: Your Interactive Decision Assistant

Choosing a digital camera



Picking out the right digital camera is a matter of finding out which features and benefits will work best for you. Answer a few questions for us, and we'll help you pick one that you'll like. There are 50 digital cameras to choose from so let's get started.

How are you planning on using the images that you'll shoot with your new digital camera? (Check all that apply.)

- ☐ **Post them to a Web site.** I need enough picture quality for my shots to look good on screen, though I don't need to print them.
- ☐ **Email them to friends and family.** I need a wide range of picture quality; some people may want to print the pictures I send.
- ☐ **Make prints out of them.** I need an upper-level camera with the best possible picture resolution, because at some point, there'll be hard copies.

Next question

Picture quality



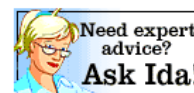
While no digital camera produces pictures with the same quality as a good film-based camera, the gap is closing, particularly with the advent of the new "megapixel" digital cameras, which feature more than a million pixels of image quality. However, for casual exchange of photos, or use on Web sites, much of this resolution is unnecessary -- screen resolution on a PC is only 75 pixels per inch.

Of course, the better your original image -- in other words, the higher the resolution it was shot with -- the better your final presentation is, whether it's on screen or in a hard-copy print. As you look through your choices, consider how much resolution you really need for your intended use. If you don't need megapixel performance, there's no reason to pay extra for it, particularly when there are excellent digital cameras around that will do fine for Web or email work.

Search

[Advanced Search](#)

QuickJump



LIVE HELP

[CLICK HERE](#)
to chat with our
customer service



Customer Service
24 hours a day
7 days a week

Toll Free
877-GO-ETOWN

CHAT! with our experts

Audio Talk
Played LOUD!
with Michael Fremer
8pm Tuesdays



Customer Service | Your Account | Shopping Cart

July 17, 2000

etown.com consumer electronics
Summer Sale

Categories

- [Home Theater](#)
- [Camcorders](#)
- [Home Audio](#)
- [Television](#)
- [Portable Tech](#)
- [Telecom](#)

News / Views

[This Just In](#)
[Reviews/Products](#)
[Features/Columns](#)
[Community Hall](#)
[Knowledge Bank](#)
[About etown.com](#)
[CE Links](#)

NEW EPISODE!

What is GPS?

Interactive Knowledge Bank



Ida: Your Interactive Decision Assistant



Experience

Your answers to the next 2 questions will help me determine which digital cameras I should recommend to you.

In general, how experienced a photographer are you?

- ☐ I'm a casual user. I like to shoot pictures, and I don't like to fuss with technology. The simpler my camera is, the better I like it.
- ☒ I know my way around a camera. I'm interested in a digital camera with features that can make my work better and more enjoyable.
- ☐ I'm an avid photographer. I want an advanced digital camera that can keep up with my ideas and provide me with the most creative options.

Next question

High-end features

All digital cameras are capable of point-and-shoot simplicity, but some have more options and features than others. If you're a casual photographer, many of these features can appear intrusive, and in most shooting situations, you may not ever need them. However, if you're an experienced photographer, you'll want a model with an extensive feature set that includes manual overrides, so that you'll have control over exposure and focus for creative effects.

Top of Page

Search

Advanced Search

QuickJump



LIVE HELP

[CLICK HERE](#)
 to chat with our
 customer service


Customer Service
24 hours a day
7 days a week

Toll Free
877-GO-ETOWN

Audio Talk
Played LOUD!
 with
Michael Fremer
8pm Tuesdays



Customer Service | Your Account | Shopping Cart

July 17, 2000



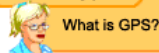
Categories

- [Home Theater](#)
- [Camcorders](#)
- [Home Audio](#)
- [Television](#)
- [Portable Tech](#)
- [Telecom](#)

News / Views

[This Just In](#)
[Reviews/Products](#)
[Features/Columns](#)
[Community Hall](#)
[Knowledge Bank](#)
[About etown.com](#)
[CE Links](#)

NEW EPISODE!



What is GPS?

Interactive Knowledge Bank



Ida: Your Interactive Decision Assistant



Budget choice

I have divided all the digital cameras into 4 budget categories. If you would like, I can exclude products that cost more than you are willing to spend.

About how much would you consider spending on a new digital camera?

- ☐ **Up to \$300.** In this price range you can expect to find a fairly basic digital camera with no zoom lens and standard picture resolution (under a megapixel). These cameras will produce images that are fine for posting to the Web or emailing, but do less well when they're printed on paper. *All of the 6 digital cameras in this range fit your expressed needs well.*
- ☒ **Up to \$600.** At the lower end of this price range you'll find some megapixel cameras that produce images that can be printed out at small sizes with acceptable results. Toward the high end, there are feature-rich cameras that produce fairly high-quality images that translate into sharp prints at sizes up to 4 x 6 inches. *All of the 24 digital cameras in this range fit your expressed needs well.*
- ☐ **Up to \$900.** If bigger-sized hard copies are what you're after, you'll probably have to step up to this price range. Cameras here generally have a zoom lens and a minimum resolution of 1.3 megapixels; some top the 2-megapixel mark. Most models in this category also have more flexibility in their operation, with more manual settings. *All of the 46 digital cameras in this range fit your expressed needs well.*
- ☐ **\$1000 or more.** This is "prosumer" territory -- the fine line between professional and consumer gear. Many models have 2-megapixel or better resolution, as well as plenty of manual options for more advanced users. Zoom is standard, and some models may have options for adding lenses (wide angle or telephoto). *All of the 50 digital cameras in this range fit your expressed needs well.*

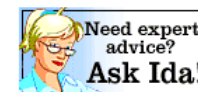
See initial recommendations



Search

Advanced Search

QuickJump



LIVE HELP

[CLICK HERE](#)
to chat with our customer service



Customer Service
 24 hours a day
 7 days a week

Toll Free
 877-GO-ETOWN

CHAT! with our experts

Audio Talk
 Played LOUD!
 with Michael Fremer
 8pm Tuesdays


Customer Service | Your Account | Shopping Cart July 17, 2000



Categories

- [Home Theater](#)
- [Camcorders](#)
- [Home Audio](#)
- [Television](#)
- [Portable Tech](#)
- [Telecom](#)

Ida: Your Interactive Decision Assistant



Initial recommendations
Here's my initial suggested shortlist of the products that best meet your needs, based on what you've told me so far. They all offer an LCD view screen, manual overrides, an optical viewfinder, a serial output connection, a video out connection, a built-in digital zoom, and are within your requested price range.

- Olympus D450Z** [See etown.com Review](#) **\$499**
Pros: it can store 18 pictures at its highest resolution, it has 1280 x 960 pixels resolution, it uses SmartMedia to store pictures, and it has an optical zoom lens.
- Olympus D460 Zoom** *Buy* **\$499**
Pros: it can store 18 pictures at its highest resolution, it has 1280 x 960 pixels resolution, it uses SmartMedia to store pictures, and it has an optical zoom lens.
- Fuji MX1200** [See etown.com Review](#) *Buy* **\$299**
Pros: it can store 23 pictures at its highest resolution, it has 1280 x 960 pixels resolution, and it uses SmartMedia to store pictures. *Cons:* it doesn't have an optical zoom lens.
- Nikon 800** *Buy* **\$599**
Pros: it has 1600 x 1200 pixels resolution, it has CompactFlash storage media, and it has an optical zoom lens. *Cons:* it can store only 8 pictures at its highest resolution.

 [Top of Page](#)

I can refine these recommendations if you tell me more about your needs. I suggest **Optical zoom** as the next question to consider, or you can select the topic you wish:

[Next question](#) 

I can also show you a feature-by-feature comparison of any of the digital cameras listed on this page.

[Compare Products](#) 

Other suitable products

Search

[Advanced Search](#)

QuickJump



Need expert advice?
Ask Ida!

LIVE HELP
 [CLICK HERE](#)
 to chat with our customer service



Customer Service
24 hours a day
7 days a week

Toll Free
877-GO-ETOWN

CHAT! with our experts
Audio Talk
 Played LOUD!
 with **Michael Fremer**
8pm Tuesdays

News / Views

- [This Just In](#)
- [Reviews/Products](#)
- [Features/Columns](#)
- [Community Hall](#)
- [Knowledge Bank](#)
- [About etown.com](#)
- [CE Links](#)

NEW EPISODE!
 What is GPS?

Interactive Knowledge Bank




Start



Quick

Y:\book

Wine.c...

Y:\book

xterm

Shortc...

Cannot...

G:\pap...

emacs...

Calend...

etow...

713tod...

Micros...

Micros...

Internet

1:45 PM



Customer Service | Your Account | Shopping Cart

July 17, 2000

Change the way you think...

Categories

- [Home Theater](#)
- [Camcorders](#)
- [Home Audio](#)
- [Television](#)
- [Portable Tech](#)
- [Telecom](#)

News / Views

[This Just In](#)
[Reviews/Products](#)
[Features/Columns](#)
[Community Hall](#)
[Knowledge Bank](#)
[About etown.com](#)
[CE Links](#)

NEW EPISODE!

What is GPS?

Interactive Knowledge
Bank



Ida: Your Interactive Decision Assistant



Optical zoom

Not every digital camera has the ability to zoom in for closeups. Some can, but only by digitally enlarging what the lens sees, a technique which is not as effective as an optical zoom. Some models have an actual optical zoom lens.

How important is a zoom?

- ☐ **Not very.** I'm not shooting from any great distances, I don't need to spend extra on a zoom feature.
- ☐ **A digital zoom is fine.** I don't need anything too extensive, but some kind of zoom feature would be useful to me.
- ☒ **I need an optical zoom.** I need a the best possible zoom function on my digital camera.

[See Recommendations](#) 

Optical and digital zoom

A zoom lens brings the subject you're shooting closer -- a useful feature if you're at a distance from your subject. However, there's a big difference between a digital and optical zoom.

A digital zoom doesn't really zoom at all. What it does is electronically enlarge the information that the lens is seeing. While this does make the image larger (more close up), the image quality suffers from the digital manipulation.

An optical zoom is part of the lens itself -- there's no digital sleight-of-hand, and no degradation of the image, no matter how much you zoom. Because an optical zoom is hardware, as opposed to a digital zoom, which is done in software, a digital camera with an optical zoom is usually more costly.

[Top of Page](#)

Search

Advanced Search

QuickJump 

Need expert
advice?
Ask Ida!

LIVE HELP

[CLICK HERE](#)
to chat with our
customer service



Customer Service
24 hours a day
7 days a week

Toll Free
877-GO-ETOWN

CHAT! with our
experts

Audio Talk
Played LOUD!
with
Michael Fremer
8pm Tuesdays



Customer Service | Your Account | Shopping Cart

July 17, 2000

Save Over 70%
Click Here

Categories

- [Home Theater](#)
- [Camcorders](#)
- [Home Audio](#)
- [Television](#)
- [Portable Tech](#)
- [Telecom](#)

News / Views

[This Just In](#)
[Reviews/Products](#)
[Features/Columns](#)
[Community Hall](#)
[Knowledge Bank](#)
[About etown.com](#)
[CE Links](#)

NEW EPISODE!



What is GPS?

Interactive Knowledge

Bank



Ida: Your Interactive Decision Assistant

✓ Recommendations



Here's my shortlist of the products that best meet your needs, based on the new information you gave me. They all offer an LCD view screen, manual overrides, an optical viewfinder, a built-in digital zoom, an optical zoom lens, and are within your requested price range.

➤ **Olympus D450Z** [See etown.com Review](#) **Buy \$499**

Pros: it can store 18 pictures at its highest resolution, it has 1280 x 960 pixels resolution, it uses SmartMedia to store pictures, and it has a video out connection.

➤ **Olympus D460 Zoom** **Buy \$499**

Pros: it can store 18 pictures at its highest resolution, it has 1280 x 960 pixels resolution, it uses SmartMedia to store pictures, and it has a video out connection.

➤ **Fuji FinePix1400** **Buy \$399**

Pros: it has 1280 x 960 pixels resolution, it uses SmartMedia to store pictures, and it has a USB connection. **Cons:** it can store only 6 pictures at its highest resolution, it doesn't have a serial output connection, and it doesn't have a video out connection.

➤ **Nikon 800** **Buy \$599**

Pros: it has 1600 x 1200 pixels resolution, it has CompactFlash storage media, and it has a video out connection. **Cons:** it can store only 8 pictures at its highest resolution.

Top of Page

I can refine these recommendations if you tell me more about your needs. I suggest **Shooting aids** as the next question to consider, or you can select the topic you wish:

Next question

I can also show you a feature-by-feature comparison of any of the digital cameras listed on this page.

[Compare Products](#) ➤ [Other suitable products](#)

Search

Advanced Search

Need expert
advice?
Ask Ida!

LIVE HELP

[CLICK HERE](#)
to chat with our
customer service**Customer Service**
24 hours a day
7 days a week**Toll Free**
877-GO-ETOWN**CHAT!** with our experts**Audio Talk**
Played LOUD!
with **Michael Fremer**
8pm Tuesdays

Internet

1:49 PM



Customer Service | Your Account | Shopping Cart

July 17, 2000



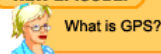
Categories

- [Home Theater](#)
- [Camcorders](#)
- [Home Audio](#)
- [Television](#)
- [Portable Tech](#)
- [Telecom](#)

News / Views

[This Just In](#)
[Reviews/Products](#)
[Features/Columns](#)
[Community Hall](#)
[Knowledge Bank](#)
[About etown.com](#)
[CE Links](#)

NEW EPISODE!



What is GPS?

Interactive Knowledge Bank



Ida: Your Interactive Decision Assistant

✓ **Nikon 800 - \$599.00 (msrp)**

Given the information you have provided, the Nikon 800 is one of my top recommendations. Click the link to go directly to a question that will explain the feature and help you decide if that feature makes sense for you!

Pros: Its advantages include:

- it has an [LCD view screen](#).
- it has manual overrides.
- it has an [optical viewfinder](#).
- it has 1600 x 1200 pixels [resolution](#).
- it has a [serial output](#) connection.
- it has [CompactFlash](#) storage media.
- it has a [video out connection](#).
- it has a built-in digital zoom.
- it has an [optical zoom](#) lens.

Cons: Possible disadvantages include:

- it can [store](#) only 8 pictures at its highest resolution.
- it doesn't have a [USB connection](#).

*The Nikon 800 is available for [online purchase](#).

[Return to Recommendations](#) ✓[Show full specification](#) ?[Next Question](#) ➔

Search

Products ▾

Search

Advanced Search

QuickJump ▾



Need expert
advice?
Ask Ida!

LIVE HELP

[CLICK HERE](#)
to chat with our
customer service



Customer Service
24 hours a day
7 days a week

Toll Free
877-GO-ETOWN

CHAT! with our experts

Audio Talk
Played LOUD!
with
Michael Fremer
8pm Tuesdays


[Modify Comparison List](#) | [Return to Product List](#)

Your Product Comparisons

Products are compared by key features. When a product lacks a feature, the feature appears in pale grey. To view a full Product Profile, click on the corresponding model number. To compare different products, click on Modify Comparison List (above).

Digital Cameras:



Digital Cameras:



Digital Cameras:



Fuji	Nikon	Olympus
Model No: FinePix1400	Model No: 800	Model No: D450Z
1.2-megapixel digital camera	CoolPix 2.1-megapixel digital camera	1.2-megapixel digital camera
1 year parts & labor	1 year parts & labor	1 year parts & labor
List Price: \$399.00	List Price: \$599.00	List Price: \$499.00
Low Price: \$329.00	Low Price: \$489.99	---
High Price: \$329.00	High Price: \$498.00	---

Buy Now!
[Find Local Retailer](#)
Buy Now!
[Find Local Retailer](#)
Find Local Retailer

320 x 240

320 x 240

320 x 240

640 x 480

640 x 480

640 x 480

800 x 600

800 x 600

800 x 600

1024 x 768

1024 x 768

1024 x 768

1280 x 1024

1280 x 1024

1280 x 1024

1536 x 1024

1536 x 1024

1536 x 1024

1344 x 1088

1344 x 1088

1344 x 1088



Start



Internet

1:55 PM



1760 x 1160	1760 x 1160	1760 x 1160
1152 x 864	1152 x 864	1152 x 864
1280 x 960	1280 x 960	1280 x 960
1600 x 1200	1600 x 1200	1600 x 1200
1000 x 1200	1000 x 1200	1000 x 1200
6 pictures at highest resolution	8 pictures at highest resolution	18 pictures at highest resolution
40 pictures at lowest resolution	50 pictures at lowest resolution	122 pictures at lowest resolution
Built-in flash	Built-in flash	Built-in flash
Compact body	Compact body	Compact body
Digital zoom	Digital zoom	Digital zoom
Floppy-disk storage	Floppy-disk storage	Floppy-disk storage
IEEE-1394 output	IEEE-1394 output	IEEE-1394 output
LCD view screen	LCD view screen	LCD view screen
Megapixel resolution	Megapixel resolution	Megapixel resolution
SLR-type body	SLR-type body	SLR-type body
Optical zoom lens	Optical zoom lens	Optical zoom lens
Optical viewfinder	Optical viewfinder	Optical viewfinder
Manual overrides	Manual overrides	Manual overrides
Serial output	Serial output	Serial output
Storage media: CompactFlash	Storage media: CompactFlash	Storage media: CompactFlash
Storage media: SmartMedia	Storage media: SmartMedia	Storage media: SmartMedia
Storage media: Memory Stick	Storage media: Memory Stick	Storage media: Memory Stick
USB output	USB output	USB output
Video output	Video output	Video output
Windows software included	Windows software included	Windows software included
Macintosh software included	Macintosh software included	Macintosh software included



Knowledge-Based Recommender

- Case-Based Example with Navigation Interface
- FindMe Systems (e.g., Entrée)



Entree Results

The Los Angeles restaurant you chose is:

Chinois On Main

2709 Main St. (bet. Rose Ave. & Ocean Park Blvd.), Santa Monica, 310-392-9025

Pacific New Wave

\$30-\$50

Extraordinary Decor, Extraordinary Service, Near-perfect Food, Hip Place To Be, On the Beach, Great for People Watching, Parties and Occasions, Weekend Brunch, Weekend Lunch, Fabulous Wine Lists

We recommend:

Yoshi's Cafe

3257 N. Halsted St. (Belmont Ave.), Chicago, 312-248-6160

Asian, Japanese, French (New)

\$30-\$50

Extraordinary Decor, Extraordinary Service, Near-perfect Food, Need To Dress, Prix Fixe Menus, Quiet for Conversation, Very Busy - Reservations a Must, Romantic, Good Out of Town Business, Fabulous Wine Lists, Garage, Parking/Valet

less \$\$

nicer

cuisine

Less \$\$

traditional

creative

livelier

quieter

Entree Results

For a cheaper restaurant than:

Yoshi's Cafe	
3257 N. Halsted St. (Belmont Ave.), Chicago, 312-248-6160	
Asian, Japanese, French (New)	\$30-\$50

We recommend:

Lulu's (map)	
626 Davis St. (bet. Chicago & Orrington Aves.), Evanston, 708-869-4343	
Japanese, Asian	below \$15
Good Decor, Excellent Service, Excellent Food, Creative, No Reservations, Weekend Brunch, Wheelchair Access, Long Drive	



Figure 3: Navigation using the "Less \$\$" tweak

More Generally

- Case-Based Approaches (Knowledge, Database, etc.) are often most helpful for ephemerally-personalized experiences
 - Shopping – suggest similar relevant items
 - Compare with collaborative – suggest items that are co-purchased or co-browsed
 - Content – suggest similar stories
- Case-Based recommendations are often easier to explain to the user

Challenges and Drawbacks

- Content-Based Techniques in general ...
 - Depend on well-structured attributes that align with preferences (consider paintings)
 - Depend on having a reasonable distribution of attributes across items (and vice versa)
 - Unlikely to find surprising connections (e.g., chili peppers or lemon with chocolate)
 - Harder to find complements than substitutes

Some take-away lessons

- Many ways to recommend based on content (product attributes)
 - Long-term: build profile of content preferences
 - Shorter-term: build database of cases; navigate
- Content-based techniques work without a large set of users (but need item data)
- Good at finding substitutes; good at helping navigate for a purchase; good explainability

Moving Forward

- Next Lectures
 - For programmers: Introduction to LensKit
 - For everyone: deeper dive into content profiles, content retrieval and filtering
- Later this Module
 - Programming deep dive; guest lectures on case-based and knowledge-based; survey of tools for content recommending

3-1: Introduction to Content-Based Recommenders