
STS 3700B 6.0 HISTORY OF COMPUTING AND INFORMATION TECHNOLOGY

SYLLABUS

"Everything should be made as simple as possible, but no simpler." (Albert Einstein)

• Outlines

The modern computer did not simply spring out of nothing sometime in the first half of the 20th century. It has a rich and long history, which is likely to be ignored or forgotten, if we only pay attention to modern hardware. This history bears witness to a deeply rooted human propensity to simplify the store of our experience, to quantify and manipulate it, to make predictions. Like biological evolution, each stage in this history constrains, to some extent, further developments, and must therefore be studied carefully, if we want to understand why we are where we are today.

- 00: Contents, Goals, Requirements
- 01: From Prehistory to History: Egypt, Babylonia, India
- 02: From Prehistory to History: Islam and Maya
- 03: Ancient Greece I
- 04: Ancient Greece II
- 05: Ancient Greece III
- 06: Ancient Hardware
- 07: The Middle Ages I
- 08: The Middle Ages II
- 09: The Seventeenth Century I
- 10: The Seventeenth Century II
- 11: Newton and the Beginning of the Modern Era
- 12: The Eighteenth Century
- 13: The Nineteenth Century: Charles Babbage
- 14: The Turning Point
- 15: Towards the First *Modern* Computers
- 16: The First *Modern* Computers
- 17: The Great Electromechanical Computers
- 18: The Electronic Revolution: the *ENIAC*
- 19: Information: Definition, Storage and Transmission
- 20: Analog vs Digital
- 21: The Last 50 Years
- 22: Concluding Remarks

Note: The entire set of lecture outlines is searchable: click on the [Search](#) button within each lecture. Searches are powered by the [Searchlight](#) java applet.



• Required Readings

- In my opinion there is no single text that spans the scope of this course. Two good, comprehensive works stand out. The first, M R Williams, **A History of Computing Technology**, is an impressive, detailed survey of computation and computing machines. It focuses, however, mostly on the technical history. **The Universal History of Computing** by Geoges Ifrah probably represents a better choice, but it is somewhat idiosyncratic. I will therefore provide more specific references in the course of the lectures, and refer to the several excellent chapters in these two books.
- U M Franklin, **The Real World of Technology**. Revised Edition. Anansi, 1990, 1999. The first edition of the book is also available on the Internet in RealAudio format: [Massey Lectures 1989: Ursula Franklin](#), but lacks the new chapters on information technology, which of course are of particular interest to us. This is a very readable, yet deep work, which addresses the fundamental social and political issues of technology.
- Michael Hauben and Ronda Hauben on-line Netbook, **Netizens: On the History and Impact of Usenet and the Internet**. "*This netbook presents the history and impact of various aspects of the Net: the Internet, ARPANET, Usenet, etc. We hope to provide information which will help readers to understand where the Net has come from so as to help preserve its value throughout future developments and changes.*" A print edition has been published by the IEEE Computer Society Press (1997). The latest **plain text** version is stored at <http://www.columbia.edu/~rh120/>.
- One book that should be on everybody's shelves, no matter what you study, is a good dictionary. A dictionary is not an encyclopedia, but a first orientation tool which, for instance, tells you that '*algorithm*' is not the latest style of hip-hop, but '*a procedure for solving mathematical problems.*' You know then that to find more information on algorithms you should look in the mathematics—not in the music—section of the library. Get a good '*collegiate*' dictionary, such as **Merriam-Webster's Collegiate Dictionary** (10th edition, Merriam-Webster, 1998). This dictionary and the companion Thesaurus are also on line at <http://www.m-w.com/dictionary.htm>.

• Suggested Readings

- J Abbate, **Inventing the Internet**. The MIT Press 1999.
- J Agar, **Turing and the Universal Machine**. Icon Books UK, 2001.
- D Berlinski, **The Advent of the Algorithm: The 300-Year Journey from an Idea to the Computer**. Harcourt, Inc., 2000.
- R R Fenichel & J Weizenbaum, eds., **Computers and Computation. Readings from Scientific American**. W H Freeman & Co, 1971,M.

- U M Franklin, **The Real World of Technology**. Revised Edition. Anansi, 1990, 1999.
- J Gillies & R Cailliau, **How the Web was Born: The Story of the World Wide Web**. Oxford University Press, 2000.
- G Ifrah, **The Universal History of Computing: From the Abacus to the Quantum Computer**. J Wiley & Sons, Inc., 2001.
- R S Rosenberg, **The Social Impact of Computers**. 2nd edition. Academic Press, 1997.
- T Roszak, **The Cult of Information**. 2nd edition. University of California Press. 1994.
- J Shurkin, **Engines of the Mind: The Evolution of the Computer from Mainframes to Microprocessors**. W W Norton & Company, 1984, 1996.
- T Standage, **The Turk: The Life and Times of the Famous Eighteenth-Century Chess-Playing Machine**. Walker & Company, New York, 2002.
- T Standage, **The Victorian Internet: The Remarkable Story of the Telegraph and the Nineteenth Century' On-line Pioneers**. Berkeley Books, New York, 1999.
- M R Williams, **A History of Computing Technology**. 2nd edition. IEEE Computer Society Press, 1997.
- Readings from **Scientific American**, **IEEE Annals of the History of Computing. Technology and Culture**, and other sources will be discussed as the course progresses. The use of the **Internet** is of course strongly encouraged.
- **Selected References**

- **Evaluation**

- A **written essay** of approximately **3000 words**, on one of a number of assigned topics, worth **50%**.
The **topics** will be announced on October 17.
Due date: **January 22, 2003**.
- A **final exam** worth **50%**.
The day, time and location will be announced by the Registrar's Office.
- **Note** : To learn how to format references to website (that is, how to 'cite' them), please consult the guidelines provided by ☐ **York's Libraries**. under '*Reference Sources on the Internet*', where you will find a wealth of useful information.

- **Time and Location**

- Tuesdays, 7 -10 pm, Stong College, Room 218

SELECTED REFERENCES

- **The AI Dictionary.**
<http://www.cse.unsw.edu.au/~billw/aidict.html>
- **Artificial Intelligence, and Robot Wisdom** - Or An Outsider's Guide to Artificial Intelligence. An overview of AI on the WWW, this provocative and opinionated short course is richly linked to useful net resources.
<http://www.robotwisdom.com/ai/index.html>
- **AskTec** - "*Founded by a team of former Executive Managers of the Gartner Group in August of 1999, TechnologyEvaluation.com and AskTEC.com have become one of the most popular technology content and search tools on the Internet...AskTEC.com is a technology vertical metasearch engine that provides access not only to content from TechnologyEvaluation.com's analysts staff, but to the content created by InformationWeek, CIO Magazine, The Industry Standard and other top content sources as well.*"
<http://www.asktec.com/>
- **The Association for History and Computing** - "*An international organisation which aims to promote and develop interest in the use of computers in all types of historical study at every level, in both teaching and research.*"
<http://odur.let.rug.nl/ahc/histlink/index.html>
- **Blinkenlights Archaeological Institute**
<http://www.blinkenlights.com/>
- **BUBL Journals** - Computing and Information Technology. Search several journals devoted to IT.
<http://bubl.ac.uk/journals/a-z.htm>
- **A Brief History of Programming Languages** - "*We've come a long way from computers programmed with wires and punch cards. Maybe not as far as some would like, though. Here are the innovations in programming.*"
<http://www.byte.com/art/9509/sec7/art19.htm>
- **Calculatibg Machines** - "*The history of mathematics goes a long way back with devices and methods of calculation. Starting with the ancient Abacus, the slide rule and the logarithms, the mechanical calculating machines, the*

electromechanical calculators and finally the electronic computer. This site deals mainly with the mechanical calculating machines from a collector's point of view."

<http://www.webcom.com/calc/>

- **The Center for the Study of Technology and Society** - *"Through original research and in-depth analysis, the Center examines the interaction of technological change and society. The Center will strive to emphasize and clarify the point that advances in technology are neither inherently good nor inherently evil—but that every new technology has the potential to cause problems, and the capacity to solve problems."*
<http://www.tecsoc.org/>
- **Chronology of Events in the History of Microcomputers** - A collection of product announcements and delivery dates from various sources, mainly computer magazines and newspapers.
<http://www.islandnet.com/~kpolsson/comphist/>
- **Classic Computer Magazine Archive** - *"The Classic Computer Magazine Archive is a small crusade to make information from old computer magazines available on the Web.."*
<http://www.atarimagazines.com/>
- **The Colline Report: Collective Invention and European Policies** -
<http://www.dauphine.fr/imri/COLLINE/objectif.html>
- **A Critical History of Computer Graphics and Animation** - *"The study of the history of CGI (computer generated imagery) is an important part of our overall educational experience, not necessarily to build on the historical precedent, but to gain an understanding of the evolution of our discipline and to gain a respect for the key developments that have brought us to where we are. The discipline is so recent in its early developments and so rapidly changing that we are in fact living it, and it evolves as we speak. Yet we have been so busy in advancing the discipline that we have often neglected to accurately record this history. So we will decide to agree upon certain past events in order to begin to develop a definitive record of what has transpired in this evolutionary process."*
<http://accad.osu.edu/~waynec/history/ID797.html>
- **The Computer Museum History Center** - *"Established in 1996, The Computer Museum History Center is a non-profit entity dedicated to the preservation and celebration of computing history. It is home to one of the largest collections of computing artifacts in the world, a collection comprising over 3,000 artifacts, 2,000 films and videotapes, 5,000 photographs, 2,000 linear feet of cataloged documentation and gigabytes of software. The collection is housed in a visible storage building in Mountain View, California, in the heart of Silicon Valley."*
<http://www.computerhistory.org/>
- **Computers: From Past to Present** - by Michelle A Hoyle, University of Regina, Canada.

<http://www.eingang.org/Lecture/>

- **Computing Before Computers** - *"Edited by William Aspray, with contributions by W Aspray, A G Bromley, M Campbell-Kelly, P E Ceruzzi, M R Williams. Copyrighted 1990 Iowa State University Press, Ames, Iowa, ISBN 0-8138-0047-1. Scanned, and processed into Adobe .PDF format by Ed Thelen September 2000 from a first edition copy lent by Michael R Williams, one of the contributors."*
<http://ed-thelen.org/comp-hist/CBC.html>
- **Computing History** - An important website at Hofstra University. Includes History in the Computing Curriculum, Chronology of Computing History, and Computing History Information.
http://www.hofstra.edu/Academics/HCLAS/CSC/ComputingHistory/index_ComputingHistory.cfm
- **Cyber Behavior Research Center** - The "*relationship between humanity and the Web,*" or the role of human behavior in the development of the Internet.
<http://www.cio.com/research/behavior/>
- **Dictionary of Computing** - *"A searchable dictionary of acronyms, jargon, programming languages, tools, architecture, operating systems, networking, theory, conventions, standards, mathematics, telecoms, electronics, institutions, companies, projects, products, history, in fact anything to do with computing."*
<http://foldoc.doc.ic.ac.uk/foldoc/index.html>
- **E-learning and Language Change. Observations, Tendencies and Reflections** - An article by H Hansson and S van de Bunt-Kokhuis which *"discusses the globalization of e-learning, changes in languages as an effect of distance technologies and the lingua franca of modern times, English, and its effects on other languages. Hybrid languages such as Spanglish (Spanish English) and Swenglish (Swedish English) emerges as an effect of the increasing interaction between non-English languages and the dominant English language. The need for speed and efficiency in communication and the adaptation to new technology changes language dramatically as is observed in chat and SMS-mediated communication. The complexity of modern human communication is discussed with a historical perspective—the old modes of communication can now be used via Internet but this transfer changes their characteristics."*
http://www.firstmonday.org/issues/issue9_8/hansson/index.html
- **Echo Virtual Center** - *"Cataloguing, Annotating, and Reviewing Sites on the History of Science, Technology, and Medicine."* In particular, check the "Computers/Info Technology" section.
<http://echo.gmu.edu/center/>
- **EEVL** - *"The Internet Guyide to Engineering, Mathematics, and Computing"*
<http://www.eevl.ac.uk/index.htm>
- **Ethnomathematics on the Web** - *"What is ethnomathematics? The term was coined by Ubiratan D'Ambrosio to describe the mathematical practices of*

identifiable cultural groups. It is sometimes used specifically for small-scale indigenous societies, but in its broadest sense the "ethno" prefix can refer to any group -- national societies, labor communities, religious traditions, professional classes, and so on. Mathematical practices include symbolic systems, spatial designs, practical construction techniques, calculation methods, measurement in time and space, specific ways of reasoning and inferring, and other cognitive and material activities which can be translated to formal mathematical representation. The ISGEM strives to increase our understanding of the cultural diversity of mathematical practices, and to apply this knowledge to education and development."

<http://www.rpi.edu/~eglash/isgem.dir/links.htm>

- **The Evolution of Culture** - An article by Daniel Dennett, which illustrates one of the most popular notions of information. From the e-zine Edge.
http://www.edge.org/3rd_culture/dennett/dennett_p1.html
- **Google Search Engine** - One of the better search engines.
"To enter a query into Google, just type in a few descriptive words and hit the 'enter' key (or click on the Google Search button) for your list of relevant results. Google only searches for pages that exactly match your search terms, so you can try using different versions of your search terms. For example, if a search for "Boston hotel" didn't turn up what you were looking for, try "Boston hotels" instead. Or you might try rephrasing your query. For example, searches on "cheap plane tickets" and "cheap airline tickets" return different sets of results. Automatic "and" Queries: Google automatically adds "and" between the words you enter so it only returns those pages that include all of your search terms. To restrict a search further, just include more terms. Google also prefers pages in which related query terms are near each other".
<http://www.google.com/>
- **The Great Transatlantic Cable** - The design, construction and science of the 2,000 mile cable beneath the Atlantic in 1866.
<http://www.pbs.org/wgbh/amex/cable/>
- **GUIDebook: Graphical User Interface Gallery** - *"Since the inception of the WIMP-based Graphical User Interface more than 20 years ago at the legendary Xerox PARC laboratory, the world has seen many GUIs come and go. While it is easy to think of graphical interfaces in terms of newest editions of Windows (95 and up), it's been much earlier and much more than that. This site is meant to be an online museum of graphical interfaces, especially those old, obscure and in desperate need of preservation."*
<http://www.aci.com.pl/mwichary/guidebook/index>
- **Highlights from The Computer Museum Reports (1982 - 1988)** - *"The Computer Museum' issued a series of reports during the period of 1/1982 through Spring 1988. The goal of this page is to provide the highlights of this series, primarily for the training of museum docents. About 3/4 of the major articles are included and about 1/2 of the associated images. Informational paragraphs about individual artifacts are not included, but are an interesting source of additional information. Note that an Index is in Volume 16".*
<http://home.c2i.net/greaker/comenius/9899/contest/Comenius.html>

- **History of Computing** - At the IEEE Computer Society.
<http://www.computer.org/history/index.html>
- **The History of Computing** - *This course [by MIT's Professor Slava Gerovitch] focuses on one particular aspect of the history of computing: the use of the computer as a scientific instrument. The electronic digital computer was invented to do science, and its applications range from physics to mathematics to biology to the humanities. What has been the impact of computing on the practice of science? Is the computer different from other scientific instruments? Is computer simulation a valid form of scientific experiment? Can computer models be viewed as surrogate theories? How does the computer change the way scientists approach the notions of proof, expertise, and discovery? No comprehensive history of scientific computing has yet been written. This seminar examines scientific articles, participants' memoirs, and works by historians, sociologists, and anthropologists of science to provide multiple perspectives on the use of computers in diverse fields of physical, biological, and social sciences and the humanities. We explore how the computer transformed scientific practice, and how the culture of computing was influenced, in turn, by scientific applications.*
<http://ocw.mit.edu/OcwWeb/Science--Technology--and-Society/STS-035Spring2004/CourseHome/index.htm>
- **The History of Computing** - One of the starting points of choice. The site includes a Virtual Computer Museum and the first computer program for playing chess, written by Konrad Zuse in 1942.
<http://ei.cs.vt.edu/~history/index.html>
- **THOCP: The History of Computing Project** - This site is dedicated to the History of Computing in the broadest sense of the word. There are seven different sections: Chronology of computers, All Tmelines, Biographies, Hardware, Software, Companies, Reference.
<http://www.thocp.net/>
- **History of the Logarithmic Slide Rule** - This is a famous study by Florian Cajori, published in 1909 and now out of print. However, a digitally scanned copy of the book is available for download at *Greg's Slide Rules* website.
<http://sliderule.ozmanor.com/man/man-download.html>
- **Hobbes' Internet Timeline** - An Internet timeline highlighting some of the key events and technologies which helped shape the Internet as we know it today.
<http://www.isoc.org/zakon/Internet/History/HIT.html>
- **Holding On to Reality** - An excerpt from Albert Borgmann's new book *The Nature of Information at the Turn of the Millennium*. **Introduction: Information vs. Reality**
<http://www.press.uchicago.edu/Misc/Chicago/066258.html>
- **How It Works...The Computer** - Scanned images of a book published in 1971, and revised in 1979. A fascinating look at the world of computing of 35 years ago...
<http://davidguy.brinkster.net/computer/>

- **Humanist Discussion Group** - An international electronic seminar on the application of computers to the humanities. Its primary aim is to provide a forum for discussion of intellectual, scholarly, pedagogical, and social issues and for exchange of information among members.
<http://www.princeton.edu/~mccarty/humanist/>
- **Information Ethics: On the Philosophical Foundation of Computer Ethics** - A good article by Luciano Floridi.
<http://www.wolfson.ox.ac.uk/~floridi/ie.htm>
- **>Information Society>** - *"The Information Society (TIS) journal, published since 1981, is a key critical forum for leading edge analysis of the impacts, policies, system concepts, and methodologies related to information technologies and changes in society and culture. Some of the key information technologies include computers and telecommunications; the sites of social change include homelife, workplaces, schools, communities and diverse organizations, as well as new social forms in cyberspace."*
<http://www.indiana.edu/~tisj/>
- **Intel Museum** - *"For the past 35 years, Intel has been a leader in technology exploration and innovation worldwide. The Intel Museum showcases Intel's history and operations through unique exhibits and presentations designed to let you explore Intel® technology first hand. Browse our online collection of interactive exhibits and educational materials developed to enhance your museum experience."*
<http://www.intel.com/museum/>
- **Intellectual Property in Cyberspace** - Who owns what information on the Internet? Who should own what information on the Internet? As usage of the Net intensifies, these questions are becoming increasingly important and controversial. Lawyers, legal scholars, judges, lawmakers, and Internet users disagree concerning how the existing set of legal rules should be applied to this new medium - and disagree even more sharply concerning whether and how those rules should be modified to manage the medium better.
<http://eon.law.harvard.edu/property/>
- **Institute for Information Technology** at the National Research Council of Canada.
<http://www.iit.nrc.ca/english.html>
- **Internet Culture** - Martin Ryder's compilation of online resources on Internet Culture.
http://carbon.cudenver.edu/~mryder/itc_data/culture.html
- **Kasparov vs Deep Blue** - *"In May 1997, IBM's Deep Blue Supercomputer played a fascinating match with the reigning World Chess Champion, Garry Kasparov. The event was captured live only on this Web site, where millions of chess and computing fans tuned in to witness the event in real-time. This Web site is an archive of that event, and information on this site has not been updated since the end of the match."*
<http://www.research.ibm.com/deepblue/>

- **Lisp History** - The history of the language traditionally associated with Artificial Intelligence.
<http://www.paulgraham.com/lisphistory.html>
- **Man vs Machine: Who Is Winning?** - *"Every year computers are becoming stronger at chess, holding their own against the very strongest players. So very soon they will overtake their human counterparts. Right? Not necessarily, says statistician Jeff Sonas, who doesn't believe that computers will inevitably surpass the top humans. In a series of articles Jeff presents empirical evidence to support his claim."*
<http://www.chessbase.com/newsdetail.asp?newsid=1229>
- **Martin Campbell-Kelly's List of Computing History Courses** - A fairly complete list of universities offering courses on the history of computing with on-line information.
http://www.dcs.warwick.ac.uk/~mck/HoC_Courses.html
- **Marvin Minsky's Home Page** - Minsky has made many contributions to Artificial Intelligence and related areas. In recent years he has worked chiefly on imparting to machines the human capacity for commonsense reasoning. His conception of human intellectual structure and function is presented in **The Society of Mind** (1987), which is also the title of a course he teaches at MIT.
<http://www.media.mit.edu/people/minsky/>
- **Mathematics in Various Cultures (MacTutor)** - This great site is maintained by the School of Mathematics and Statistics at the University of St.Andrews, Scotland, and selectively covers ancient Babylonian, ancient Egyptian, ancient Greek, Indian, Arabic, Mayan, American and Scottish mathematics.
<http://www-groups.dcs.st-and.ac.uk:80/~history/Indexes/HistoryTopics.html>
- **Media Lab Europe** - *"Media Lab Europe invents by bringing together scientists, engineers and artists from different backgrounds, disciplines, cultures and nationalities to create technologies and explore applications that have barely been dreamt of before. With the research we engage in and the tools we invent, science is being advanced, knowledge increased, boundaries extended and human life improved."*
<http://www.medialabeurope.org/research/>
- **The Mercurians** - *"The Mercurians began meeting in 1986 for the purpose of generating networks between people who share work and interests in the history of communication technologies, defining the field broadly. Our activities include publishing a semi-annual newsletter, **Antenna**, meeting annually at Society for the History of Technology (SHOT) conferences, organizing paper sessions for SHOT meetings, and pursuing contacts between meetings. **Antenna** serves both as a clearing house for readers and an informal forum for their ideas."*
<http://www.mercurians.org/frontdoor.html>
- **Michael S Mahoney, Articles on the History of Computing** - Michael S Mahoney is Professor of History in the Program in History of Science, Department of History, Princeton University. This page includes several of his

writings, in particular *The History of Computing in the History of Technology*, which appeared in **Annals of the History of Computing**, 10(1988), 113-125 [pdf], and *The Histories of Computing(s)*, a lecture in the series **Digital Scholarship, Digital Culture**, at the Centre for Computing in the Humanities, King's College, London, 18 March 2004.
<http://www.princeton.edu/~mike/computing.html>

- **Milestones in the History of Thematic Cartography, Statistical Graphics, and Data Visualization: An Illustrated Chronology of Innovations** - This site is maintained by Michael Friendly and Daniel J Denis at York University. *"The graphic portrayal of quantitative information has deep roots. These roots reach into histories of thematic cartography, statistical graphics, and data visualization, which are intertwined with each other. They also connect with the rise of statistical thinking up through the 19th century, and developments in technology into the 20th century. From above ground, we can see the current fruit; we must look below to see its pedigree and germination. There certainly have been many new things in the world of visualization; but unless you know its history, everything might seem novel."*
<http://www.math.yorku.ca/SCS/Gallery/milestone/index.html>
- **MiningCo: Computing/Technology.**
<http://home.miningco.com/compute/index.htm?COB=home&PID=>
- **The Modern History of Computing** - Part of the Stanford Encyclopedia of Philosophy, this page is a good summary of the history of computing from Babbage to about 1950, and includes a bibliography and links to other resources.
<http://plato.stanford.edu/entries/computing-history/>
- **The Neo-Luddite Reaction** - *"Cultural change necessarily involves resistance to change. The term Luddite has been resurrected from a previous era to describe one who distrusts or fears the inevitable changes brought about by new technology. The original Luddite revolt occurred in 1811, an action against the English Textile factories that displaced craftsmen in favor of machines. Today's Luddites continue to raise moral and ethical arguments against the excesses of modern technology to the extent that it threatens our essential humanity."* A large collection of good resources and links.
http://carbon.cudenver.edu/~mryder/itc_data/luddite.html
- **Netizens: An Anthology - On the Impact and History of Usenet and the Internet**
An ambitious look at the social aspects of computer networking. The authors, Michael Hauben and Ronda Hauben, examine the present and the turbulent future, and especially the technical and social roots of the *Net*.
<http://www.columbia.edu/~rh120/>
- **Nicholas Negroponte's Home Page** - With links to his WIRED Columns. (1993-1998).
<http://www.media.mit.edu/~nicholas/>
- **The Roads and Crossroads of Internet History** - Gregory Gromov's

"comprehensive and fascinating overview of the philosophy and history of the Internet. Many related links and a section on pertinent statistics. From Internet Valley, a Sacramento, California Internet consulting and publishing company."

<http://www.netvalley.com/intval.html>

- **SciTech Daily Review** - *"It can be hard to find intelligent, informed science and technology coverage, so we treasure those writers and publications who make the effort to help keep us informed. Settle back and read the thought-provoking coverage of scitech issues with SciTech Daily Review,"* as well as the latest news.
<http://www.scitechdaily.com/>
- **The Scout Report** - The Scout Report is the flagship publication of the Internet Scout Project. Published every Friday both on the web and by email, it provides a fast, convenient way to stay informed of valuable resources on the Internet. Our team of professional librarians and subject matter experts select, research, and annotate each resource.
<http://scout.cs.wisc.edu/scout/report/>
- **The Singularity Institute for Artificial Intelligence** - *"When the Singularity Institute says that it intends to develop AI, we mean real AI, in the full, intuitive sense of the word. This is, obviously, a long-term project, and there will be interim prehuman proto-minds that do interesting things but are not human-equivalent. But the proposed project is not a project to design an interesting proto-mind, with real AI coming at some point in the indefinite future; it is a specific proposal for building a genuine and complete mind, recognizable as a complete mind to anyone who takes a few minutes to chat, and not just philosophers who believe in a particular theory of mind."*
<http://singinst.org/intro/AI.html>
- **Society, Cyberspace, and the Future** - How Can New Interactive Communication Technology Enhance Harmonious and Functional Communities at all Scales Worldwide? Report of an Exploratory Aspen Workshop.
<http://www.cco.caltech.edu/~rich/aspen.html>
- **Some Dates in the History of Cultural Technologies** - From *Ideographic or syllabic writing to Calculators and Computers*.
<http://www.worldhistorysite.com/culttech.html>
- **The Spire Project: A Better Way to Find Information** - An excellent guide to searching for information. The entire site is freely downloadable in one zipped file.
<http://spireproject.com/>
- **Steven Lubar's Course on the History and Sociology of Science** - Technology and Society/Information and Communications (University of Pennsylvania).
<http://ccat.sas.upenn.edu/slubar/m003.html>
- **The Systems Home Page** - An informal organization for technical women in

computing that began in 1987 as a small mailing list for women in "systems", thus the name systems. There are now over 2500 systems in 25 countries.

<http://www.systems.org/>

- **Techmate** - Garry Kasparov, 13-time world chess champion, sinks into a deep blue funk.
<http://www.forbes.com/asap/99/0222/071.htm>
- **Tools For Thought** - Howard Rheingold's "*exercise in retrospective futurism.*" A full on-line book "*written in the early 1980s [and revised in 2000], attempting to look at what the mid 1990s would be like...[and] to piece together how Boole and Babbage and Turing and von Neumann--especially von Neumann--created the foundations that the later toolbuilders stood upon to create the future we live in today. You can't understand where mind-amplifying technology is going unless you understand where it came from.*"
<http://www.rheingold.com/texts/tft/>
- **Transatlantic Cable Communications** - "*The Original Information Highway. Explore the original information highway in North America by looking at Canso, Nova Scotia in 1874. The Canso Historical Society, in partnership with Industry Canada, has put together this interesting web site with period photographs and information.*"
<http://collections.ic.gc.ca/canso/index.htm>
- **The Turing Digital Archive** - "*This digital archive contains mainly unpublished personal papers and photographs of Alan Turing from 1923-1972. The originals are in the Turing archive in King's College Cambridge. It contains letters, obituaries and memoirs written by colleagues and used by Sara Turing for her biography of her son (Heffers: Cambridge, 1959); talks and publications on the Automatic Computing Engine, his work at the National Physical Laboratory, the theories of computable numbers, digital computers, morphogenesis and the chemical development of cells.*"
<http://www.turingarchive.org/>
- **The Turing Test Page** - "*When talking about the Turing Test today what is generally understood is the following: The interrogator is connected to one person and one machine via a terminal, therefore can't see her counterparts. Her task is to find out which of the two candidates is the machine, and which is the human only by asking them questions. If the machine can 'fool' the interrogator, it is intelligent. This test has been subject to different kinds of criticism and has been at the heart of many discussions in AI, philosophy and cognitive science for the past 50 years.*"
<http://cogsci.ucsd.edu/~asaygin/tt/ttest.html>
- **The Turing Test and its Role in Modern Thought** - By Mark Halpern. "*This is the first part of a two-part paper on the intellectual construct called the Turing Test (henceforth just 'Test'), and the role it has played, mainly in Artificial Intelligence, but also to some extent in Robotics, Epistemology, the Philosophy of Mind, and related disciplines and projects. This first part deals*

*with direct appeals to the Test by AI workers, and various interpretations that have been made of it; the **second** [...] deals with the most determined and thorough-going attempt to realize the Test, the Loebner Prize Competition, and with the principal attack on the Test, John Searle's Chinese Room thought experiment."*

<http://www.rules-of-the-game.com/com005-turin1.htm>

- **UNIVAC Memories** - *"This document is an ever growing collection of memorabilia, contemporary documents, and anecdotes recounting the history of UNIVAC 1100 series mainframes. The first computer I ever used was a UNIVAC 1107, and for more than a decade stretching from 1967 through 1978, most of my programming was oriented toward those machines, spanning four generations of hardware: the 1107, 1108, 1110, and 1100/80 (which I used briefly to develop microprocessor software)."*
<http://www.fourmilab.ch/documents/univac/>
- **Usenet: From the Campus to the World** - *"Usenet, the venerable Internet discussion board, is now over 20 years old. People from around the world have gathered at its virtual roundtables to converse about topics from aeronautics to zoology, in the process creating vibrant global communities surrounding thousands of topics. To honor Usenet's place in the Internet revolution, the ECHO staff has created this site, which will gather important recollections and pieces of Usenet history."*
<http://echo.gmu.edu/usenet/index.html>
- **A Very Brief History of Computer Science.**
<http://www.math.uwaterloo.ca/~shallit/Courses/134/history.html>
- **The Vintage Calculator Web Museum** - *"A celebration of old calculators showing the evolution from mechanical calculator to hand held electronic calculator."*
<http://www.vintagecalculators.com/>
- **The Virtual Museum of Computing** - This virtual museum includes an eclectic collection of World Wide Web (WWW) hyperlinks connected with the history of computing and on-line computer-based exhibits available both locally and around the world.
<http://vmoc.museophile.com/>
- **Western Union Telegraph Company Records, 1820-1995** - The Lemelson Center for the Study of Invention and Innovation at the Smithsonian Institution presents the listing of Western Union Telegraph Company records. It includes a short history of the telegraph.
http://invention.smithsonian.org/resources/fa_wu_index.aspx
- **The WWW Virtual Library: Computing.**
<http://src.doc.ic.ac.uk/bySubject/Computing/Overview.html>
- **The WWW Virtual Library: Information Management.**
<http://vlib.org/InformationManagement.html>
- **Yahoo! - Computers and Internet.**

http://dir.yahoo.com/Computers_and_Internet/

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