

## Artificial Intelligence: Ethics

### Admin

#### Drafts due Sunday (5/12) by 11:59pm

- should look/read like a small research paper
  - Abstract
  - Intro
  - Approach/Algorithm (final version)
  - Results
  - Conclusion
- this is NOT a project report (it's a paper!)
  - I don't want a play by play of what happened
- Be creative with how you present your data

#### Reviews due Wednesday (5/15) by 11:59

- Be constructive
- Be precise (give lots of concrete examples)
- Think about what feedback would be useful for you

### Admin

#### Presentations 5/20 7-10pm


- General overview
    - problem
    - motivation/application/usefulness of domain
    - approach/algorithm
    - results
  - strict maximum of 15 min (10 min. if solo)
    - this generally means ~15 slides
  - All people in group should participate in presentation
  - I'll have my laptop if anyone needs it
    - Have one person in your group show up 5-10 min. before class and try out your laptop on the projector
- Attendance is required!**
- let me know if for some reason you have scheduling constraints



## Four Broad Principals of Data Presentation

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- *Integration:* Tables and graphics should be part of a “seamless information flow”. Text should refer to and direct readers towards these exhibits.
- *Speed and Efficiency of Communication:* Figures/tables should be clearly and simply presented, well-titled, and well-labeled
- *Engagement in Depth:* The longer the viewer spends with an exhibit, the more they should get out of it. “The goal is to create a richly informative exhibit that is dense with information, but open and accessible to the eye.”
- *Trustworthiness:* Exhibits present factual information. They must be supported with appropriate sourcing and with all information presented correctly and understandably.



## Creating good figures and tables

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communicate ideas with clearly and efficiently, i.e. convey the most information in the shortest time/space

Compare relationships between numerous variables/values/ideas

tell the truth about the data



## Some Rules of Thumb

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- show the data
- avoid distorting the data
- make large amounts of data coherent
- encourage the viewer to use the graphic as you intend, e.g. make comparisons
- be closely integrated with written descriptions of the data
- be as simple as possible



## Design Guidelines

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- use a properly chosen format
- use words, numbers, and graphics together
- display an accessible complexity of detail
- have a story to tell about the data
- produce technical details with care
- avoid clutter

## Tables

“An informative table supplements rather than duplicates - the text.” (APA 1994)

Tables “are the best way to show exact numerical values and are preferable to graphics for many small data sets {of about 20 numbers or less}.” (Tufte 1983)

Tend to use tables when there is no ordering to the data

## Good table

System	BLEU	Oracle	Length Ratio	% unchanged
SimpleTT	0.564	<b>0.663</b>	0.849	57.5%
Moses-Diff	0.543	-	0.960	12.8%
Moses-Del	<b>0.605</b>	0.642	0.991	56.9%
T3	0.244	-**	0.581	23.3%
K&M	0.406	0.602	0.676	10.5%
augm-K&M	0.498	0.609	0.826	20.7%
corpus mean	-	-	0.85	26.7%

Table 1: Automatic evaluation scores for all systems tested and the mean values from the training corpus. \*Moses-Diff uses the *n*-best list to choose candidates and therefore is not amenable to oracle scoring. \*\*T3 only outputs the single best simplification.

### POPULATION GROWTH, PAST AND FUTURE

Year	Tallahassee	Unincorporated	Leon County
1930	10,700	12,776	23,476
1940	16,240	15,406	31,646
1950	27,237	24,353	51,590
1960	48,174	26,051	74,225
1970	72,624	30,423	103,047
1980	81,548	67,107	148,655
1990	124,773	67,720	192,493
2000	150,624	88,828	239,452
2001	153,658	90,550	244,208
2010	172,400	105,900	278,300
2020	194,100	123,600	317,700
2030	217,100	137,600	348,700

Use a graph to see temporal trends

Sources:  
 1930-2000 - U.S. Department of Commerce, Census Bureau  
 2001-2030 - Leon County; University of Florida, Bureau of Economic and Business Research  
 Tallahassee: Planning Department, assuming continued annexations.

## Charts/Graphs

“Figures convey at a quick glance an overall pattern of results.”

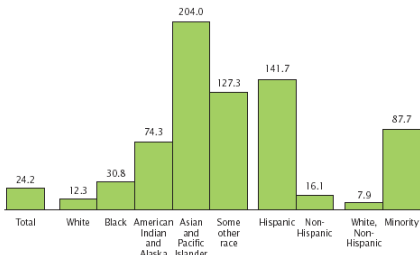
They are especially useful in describing an interaction - or the lack thereof - and nonlinear relations.” (APA 1994)

# Figure/graph types?

# Bar Charts and Graphs

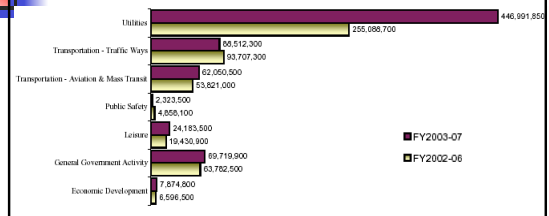
Bar charts / graphs (histograms) are typically used when you have categorical data

Percent Change in Population Size by Race and Hispanic Origin: 1980-2000



Source: U.S. Census Bureau, decennial census of population, 1980 and 2000.

HISTORICAL AND PROJECTED CAPITAL EXPENDITURES



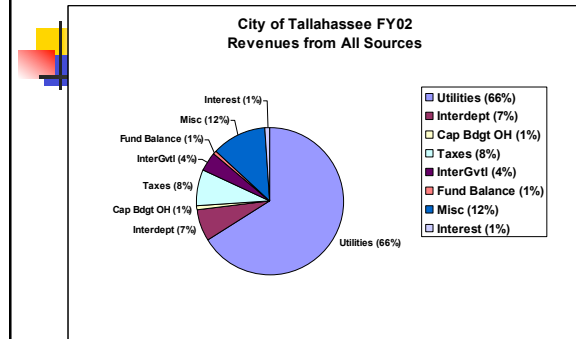
Source: Tallahassee 2003 CIP

Clustered Bar Chart Example

## Pie Charts

**Pie charts** are used to illustrate percentages or proportions of a whole

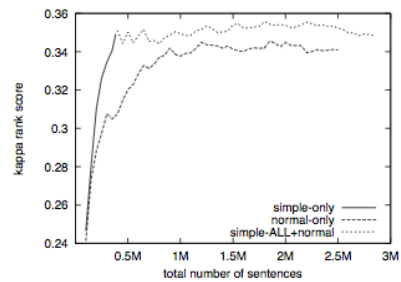
“at best, they allow readers to see crude proportions among a *few* elements.” (Booth et al. 1995)

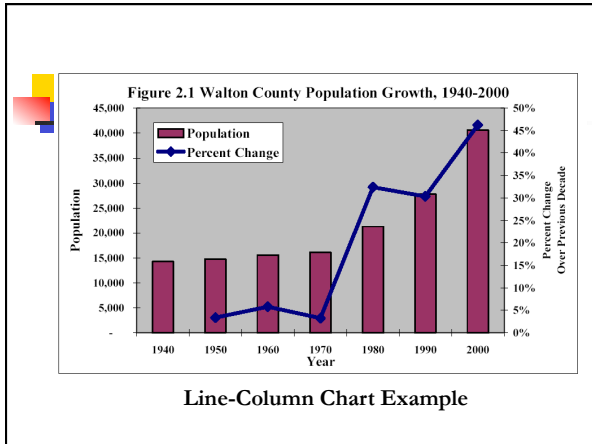
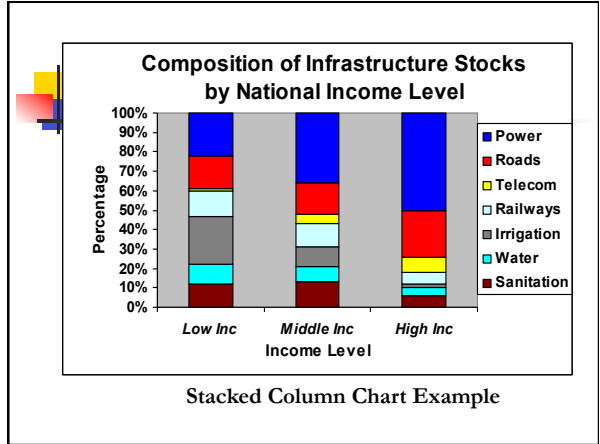
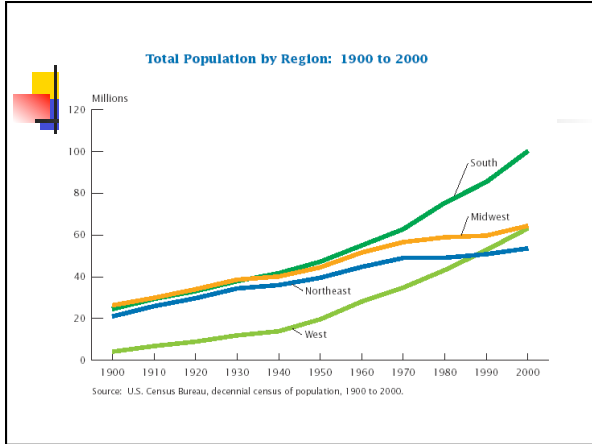


## Line Graphs

**Scatter plots** and **line graphs** are used to show the relation between two quantitative variables where there is a unique value of the dependent variable for any value of the independent variable

**Line graphs** are especially effective at presenting ordered data





## Ethics

“the study of values - good and bad, right and wrong” & “quality of life impact”

Meta-Ethics -

- Studying where our ethics come from

Normative Ethics

- Generating moral standards for right vs. wrong
- The consequences of our behaviors on others

Applied Ethics

- Examining specific controversial issues (nuclear war, animal rights)

## Ethics in Scientific Research/ Innovation

What are some examples of scientific research in which ethics play a large role?

- Stem cell research
- Cloning/genetically modified food
- Nuclear technology
- Animal rights
- Medical trials
- Disease research (e.g. biowarfare)
- ...

## Consequences

New technologies have unintended negative side effects

Scientists and engineers must think about:

- how they should act on the job
- what projects should or should not be done
- and how they should be handled

## An example

A Dream of Trees Aglow at Night



"We are very cognizant of the precedent we are setting' with the do-it-yourself project and that some of the money raised would be used to explore public policy issues."

Anthony Evans, left, and Kyle Taylor show E. coli with jellyfish genes.

Photo: Debbie Liu for The New York Times

By ANDREW POLLACK


Published May 7, 2013

<http://www.nytimes.com/2013/05/08/business/energy-environment/a-dream-of-glowing-trees-is-assailed-for-gene-linking.html>

## Ethics in CS/Technology?


DRM (digital rights management)

Privacy



## Ethics of AI

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## Ethics of AI

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*People are thinking about this:  
AAAI symposium on "Machine Ethics"*

- 1) People might lose their jobs to automation.
- 2) People might have too much (or too little) leisure time.
- 3) People might lose their sense of being unique.
- 4) People might lose some of their privacy rights.
- 5) The use of AI systems might result in a loss of accountability.
- 6) The success of AI might mean the end of the human race.



## People might lose their jobs to automation


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workers displaced by AI

AI does work that people can't do because of cost (spam filters; fraud detection in credit card transactions)

Textbook asserts:

- AI has created more jobs than it has eliminated
- AI has created higher paying jobs
- "expert systems" were a threat, but "intelligent agents" are not



## People might have too much (or too little) leisure time.

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People in 2001 might be "faced with a future of utter boredom, where the main problem in life is deciding which of several hundred TV channels to select."  
-Arthur C. Clarke (1968)






## “working harder”

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Can you think of any occupations in which people work harder because of the creation of some technology?

Can you think of any occupations in which people work harder because of the creation of *AI* technology?




## People might lose their sense of being unique.

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If an AI is created, won't that also mean that people are equivalent to automata? Will we lose our humanity?

Threat to society argument by Weizenbaum (ELIZA)

- AI research makes possible the idea that humans are automata (self operating machine or mindless follower)



## People might lose some of their privacy rights.


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‘intelligent’ scanning of electronic text, telephone conversations, recorded conversations...

SIGKDD (Knowledge Discovery and Data Mining)

- Darpa's Terrorism Information Awareness
- TSA's CAPPS (passenger screening)
- FBI's trilogy system

Gmail and Query Logs



## The use of AI systems might result in a loss of accountability.

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If an expert medical diagnosis system exists, and kills a patient with an incorrect diagnosis, who is at fault?

Internet Agents


Autonomous Cars

Voting Systems

## Law in Virtual Worlds

Second Life

## The success of AI might mean the end of the human race.



Can we encode robots or robotic machines with some sort of laws of ethics, or ways to behave?

How are we expected to treat them? (immoral to treat them as machines?)

How are they expected to behave?



FOR THOSE WHO QUESTION MY AI RESEARCH AND ITS RESULTS I TELL YOU THERE IS NO SUCH THING AS SUPER-INTELLIGENCE. GREAT INTELLIGENCE RESULTS IN AUTISM.

GOOD. YOU TELL THEM GREATER INTELLIGENCE ARE INCAPABLE OF DECEPTION.

<http://www.smbc-comics.com/index.php?db=comics&id=2956#comic>

## Laws of Robotics

- **Law Zero:** A robot may not injure humanity, or, through inaction, allow humanity to come to harm.
- **Law One:** A robot may not injure a human being, or through inaction allow a human being to come to harm, unless this would violate a higher order law.
- **Law Two:** A robot must obey orders given it by human beings, except where such orders would conflict with a higher order law.
- **Law Three:** A robot must protect its own existence as long as such protection does not conflict with a higher order law.

## Robot Safety

"As robots move into homes and offices, ensuring that they do not injure people will be vital. But how?"

"Kenji Urada (born c. 1944, died 1981) was notable in that he was one of the first individuals killed by a robot. Urada was a 37-year old maintenance engineer at a Kawasaki plant. While working on a broken robot, he failed to turn it off completely, resulting in the robot pushing him into a grinding machine with its hydraulic arm. He died as a result."

- Over 5 million roombas sold
- By 2020, south korea wants 100% of households to have domestic robots
- Japanese firms have been working on robots as domestic help for the elderly

## Robot Rights

Robot rights are like animal rights  
- David J. Calverly

### Examples

- Robbing a bank – what if a robot robs a bank?

