Global Impact

The social aspects of technology

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Computing Enhances Communication, Interaction, and Collaboration

Email(electronic mail)

Text compositions sent from one IP address to another.

SMS(short message service)

Text messages, usually supported by mobile phone services.

Chat

This is where a website provides a chat window, where a user can communicate via text.

Video conferencing

A user can communicate with individuals or groups via video.

Computing Enhances Communication, Interaction, and Collaboration

Social media

Websites which allows users to generate their own content, and share it with other members of their community.

Cloud computing

A user can purchase processing power and data storage which is deployed via the Internet, rather than having to establish their own system.

Computing Provides Widespread Access to Information

Public data

Users are able to easily access large repositories of publicly available data, for example: population data, economic data, climate data, etc.

Search trends

Search engine companies can investigate their users' queries, to discover any trends that may arise, for example: flu outbreaks, viral videos, etc.

Social media

Users can generate their own content(posts, images, videos) and share it with large numbers of people.

Computing has Changed how People Interact with the Physical World

Global positioning system(GPS)

This has changed the way people travel, navigate, and discover information related to geolocation.

Smart technologies

These are based on sensor networks, and when used with other members of a network, can solve significant problems, for example: smart grids, smart buildings, smart transportation, etc.

Computing has Changed how People Interact with the Physical World

Sensor networks

These are networks of sensors that collect data, and provide reports on this data.

Enhancing human capabilities

These technologies enable humans to accomplish tasks that they normally would not be able to perform, for example: enhanced vision, robotic exoskeleton, etc.

Computing has Enabled Online Collaboration and Participation

Citizen science

People can use their computers to participate in large-scale problem-solving schemes, for example: SETI@Home, protein folding, prime number searching, etc.

Digitally-enabled collaboration

- People can contribute small tasks towards a larger, more complicated project.
- For example: open source software allows anyone to submit software contributions, which, if accepted, become part of the official codebase.

Computing has Enabled Online Collaboration and Participation

Crowdsourcing

- Organizations can allow people to participate in their services, usually with a mutually beneficial effect.
- For example, Duolingo provides language translation services, facilitated by people who use their application to learn new languages.

Computing has Changed how People Access Daily Activities

e-commerce

People can shop online, and have the goods delivered to their residence, for example: Amazon, Taobao, etc.

Health care

People can use information repositories to investigate symptoms, for example: WebMD, Mayo Clinic, etc.

Entertainment

Users can access music and video content from provider sites, for example: Netflix, Spotify, etc.

Computing has Changed how People Access Daily Activities

Education

- People can gain knowledge from Massively Open Online Courses(MOOCs). They have access to the world's best courses and lecturers, for example: edX, Coursera, etc.
- However, credentials gained under these schemes are not yet universally accepted.

Computing has Enabled Innovation in Many Professional Fields

Machine learning and data mining

This involves the use of large data sets and artificial intelligence, to discover patterns in human behaviour.

Scientific computing

Scientists can construct computer models and software simulations to learn more about real-world events, for example: simulating the effects of a drug on a patient.

Information sharing

People can contribute content on information sharing sites, such as Wikipedia.

The Creative Commons Licence

Open Access and Creative Commons are licences which allow content creators to freely share their work.

Creative Commons Licence Options

- **CC**: Creative Commons
- **BY**: Attribution. Must acknowledge the original content creator.
- **NC**: Non Commercial. You can use the materials, but you can't monetize them.
- **SA**: Share Alike. You can make changes to the content, but but the resulting material must also be openly shared.
- **ND**: Non Derivatives. The content must be shown entirely, you cannot remove sections from it.

The Economic, Social, and Cultural Effects of Computing Can Be Both Beneficial and Harmful

- Distribution channels have made digital media, such as music and videos widely available.
- In response, the US Congress passed the Digital Millenium Copyright Act(DMCA). This act makes it illegal to create or use countermeasures intended to defeat digital encryption.
- Computing has made media piracy so simple and effortless, that content creators are not being properly compensated for their work.

The Economic, Social, and Cultural Effects of Computing Can Be Both Beneficial and Harmful

Privacy versus social benefit

- Citizens are increasingly concerned about their right to keep their information private, for example: economic records, health data, etc.
- However, if this data wer made widely available to researchers as large datasets, they could draw inferences which would benefit society as a whole, for example: targeting social programs, identifying areas of greatest need, etc.

The Economic, Social, and Cultural Effects of Computing Can Be Both Beneficial and Harmful

The digital divide

- People in lower socioeconomic groups are unable to afford computers and Internet connectivity. Therefore, they are unable to access the many benefits that modern computing can provide.
- In other words, those who can afford modern technology have dramatically increased standards of living, while others stagnate.

Increasing in Computing Power have Led to Innovations

Moore's law

- This is the observation that computer processing power tends to double every 18 months.
- This means that industries can plan out their research and development schemes to coincide with this processing increase.

Global Impact: End of Notes