

Storage Technologies

Non-volatile storage

Preserving data when powered off

- Punched cards, punched tapes
- Magnetic cores
- Magnetic disks
- Magnetic floppies
- ROM, PROM
- Flash memory

I/O & Human Interface

- Graphics/animation and image
- Pattern recognition
- Acoustics and sound synthesis
- Voice recognition
- GUI
- Touch screen



Computing Systems

- Microprocessors
- Desktop PC, notebook/smart-phone, tablet
- Servers
- Supercomputers
- Embedded systems (why embedded?)
- Multi-core/multiprocessing
- Parallel & array processing
- Cloud computing
- Fault-tolerant computing

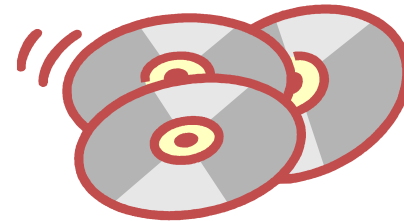


Software Technologies

- Flowchart
- UML (unified model language)
- Programming
- High-level programming
- Object programming
- Software engineering
- Simulation and modeling
- Automatic programming

System Software

- Operating systems
- Compilers, assemblers, and linkers
- Interpreters / Emulators
- Networking
- Middleware
- Database
- Drivers



Application methodologies

- Heuristics
 - Ad hoc
 - Trial-and-error
 - Decision tree
- Mathematical and knowledge management
 - Numerical methods
 - Resource management
 - Propositional logic
- Learning
 - Maintain past data for future use – learn from the past
From histograms to make decisions
 - Adjust weighing factors to improve decisions
 - Simulating various models with past data

Innovation cont.

- New needs and demands
- Requirement changes
- Improved affordability
- Technology improvements
 - Performance, miniaturization, energy reduction, materials, cost, etc.
- Technology transport – PC to iPhone, to iPad, to iTV (?)
- Space technology to military, to consumer

Paper and team project topics

- Technology
- Professional applications
- Social applications

Self-proposed topics are preferred.



Potential topics on professional applications

- Computing technology support for Stephen Hawking
- Computing and environment – high-tech wastes and solutions
- Internet on law enforcement and crime control
- Computing and education, commerce, retail, privacy, or security.
- Program trading – stocks, bonds, and commodities
- Simulations for R&D and training
- Traffic and flight control systems
- Expert systems on resource management, scheduling, etc.

Potential topics on social applications

- Computing and social behavior
- Computing music, computing arts
- One-stop solution on Internet for home applications
- Interactive movies and TV programs
- iPod, iPhone, iPad, iTunes, and iCloud.

What next – iTV, iHome, iSolutions, iGuru and iPal ?

- What should iTV do ?
- What should iCloud deliver ?
- Is there life beyond Apple ?
- Google, Yahoo, Baidu, Facebook, YouTube, Twitter, LinkedIn – what next?

– End –

