

CS 744

Lecture #1.

what are computing systems?

- s/w & h/w elements

- to provide functionality / service.

} computer-driven.

- characteristics : IO, logic goal, resource requirements,

interaction requirements.

examples:

+ Internet
+ web services
+ PoS devices
+ Autonomous vehicles

+ Satellite systems
+ ~~some~~ vending machines
+ ...

Requirements : (~~for~~ from the computing system)

- usability
- reproducibility / fidelity / deterministic
- scalability
- ~~secure & robust~~
- error handling & observability
- functional correctness.
- availability
- efficient
- reliable / failure handling.
- performance specification (SLA)
 - service level agreement
 - cost tradeoff.
- ~ verifiability

the systems approach -

→ design . build . test . repeat.

- + based on reqs.
- + logic
- + components
- + interactions
- state

implement

the computing stack!

(#)

distributed / networked
applications

└ appⁿs.

└ libraries / platforms

└ OS

└ h/w — cpu, n/w, mem, IO

└ chips / IC

└ boolean logic

└ transistors

└ silicon

this is where all the
physical action is. →

