CS7NS1/CS4400
SCALABLE COMPUTING

Exam Prep

Just 1 slide!

Remember key themes:
Scalable, Adaptive, Dispersed, Accessible, Affordable, Reliable

And Concepts:
Processing, Communications, Proximity, Trust

Scalable Computing

IoT ...	Processing Units ...	Cloud/Fog ...	Projects ...
Data: Relevance, Learning **Protocols:** Routing Coordinated, Distributed, Decentralised, P2P – UMG, Tinytorrents **Comms:** Interference Duty Cycle **Reliability:** Intermittent **Constraints:** Security, Energy, Deployment **Industry 4.0:** Data, Prediction, Maintenance, Analytics, ML, Industrial Internet	**CPUs:**·Frequency / performance scalability https://www.mcs.anl.gov/~itf/dbpp/text/node26.html Parallelism – Partitioning, communication, agglomeration, mapping, Performance, algorithms **GPUs**: Scaling – weak and strong. Hash cracking, coin mining – benefits? **ASICs**, **FPGAs**, etc <u>**c.f.**</u> Tensorflow, Keras, code	➤ Private / public / edge / hybrid / multi cloud ➤ Provisioning, Elasticity, Cost/Incentive, Accessibility, Flexibility, Resource pooling / virtualization, Computation, Communication, Storage, Resiliency, Offloading, Bandwidth, Latency, Energy, Location-Edge, Security, Privacy, Disaster proofing ➤ as a Service – Infrastructure, Platform, Software ➤ Hardware/Software ➤ SLAs, Io ➤ Edge, Fog, Industrial Internet	➤ What have you learned so far? ➤ (some)Python ➤ CPU/GPU targeting ➤ Basic AI/ML differences ➤ (some)tensorflow and keras ➤ Build and deploy ML system to solve human task ➤ Improve it! ➤ Optimize and deploy it for and on IoT ➤ Optimally locate capabilities ➤ See notes/additional material