Technologies That Will Shape Computing in This Decade: An IEEE Perspective

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Contents significantly reduced from original talk

Technologies That Should Shape Your Education/Business in This Decade: An IEEE Perspective

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Disclaimer

- Ideas represented in this presentation are those of author’s only and do not necessarily align with any IBM direction.

2016 Technology Predictions & Grades

- Data Science: A
- Advanced Machine Learning: A
- Containers: A
- Virtual Reality and Augmented Reality: B+ → still in research
- Cyber Physical Systems (CPS): B+ → still in research
- 5G: B → adaptation did not take place
- Network Function Virtualization (NFV): B → still needs virtualization of computation and storage levels
- Nonvolatile Memory: B- → technology announcements did not materialize
- Capability-based Security (key-based instead of hierarchical rings): C → too early for adaptation

https://www.computer.org/press-room/2016-news/2016-tech-grades

2017 Technology Predictions & Grades

- Containers: A++ → missed in predictions
- Artificial intelligence (AI), machine learning (ML), cognitive computing: A+
- Ethereum, other digital currency: A+ → missed in predictions
- Accelerators: A
- Blockchain (beyond Bitcoin): A
- Microservices: A → missed in predictions
- Sensors everywhere and edge computing: A-
- Industrial IoT: B+ → not reached broad adaption
- 5G: B → broad adaption questionable given standards
- Self-driving cars: B- → legal and ethical concerns; negative press
- Hyper-converged systems: B → lacking software defined everything vision
- Disaggregated memory/fabric-attached nonvolatile memory (NVM): C+ → hardware limitations overshadowed software benefits

https://www.computer.org/press-room/2017-news/report-card-2017-trends

2018 Technology Predictions & Grades

- Industrial IoT: A+
- Blockchain: A
- Accelerators and 3D: A
- Deep learning: A-
- Assisted transportation: A-
- Robotics: B+ → did not achieve full potential
- Augmented reality and virtual reality (AR/VR): B- → limited adaptation/gadgets
- Ethics, laws, and policies for privacy, security, and liability: C+ → more focus needed on policies, privacy, security, and liability.
- Cybersecurity and AI: C → not its time yet
- Digital currencies: C- → limited adaptation due to volatility of cryptocurrencies

https://www.computer.org/press-room/2018-news/ieee-cs-grades-2018-technology-prediction

2019 Technology Predictions & Grades

- Deep learning accelerators: A
- Assisted transportation: A/B → not yet full autonomous
- The Internet of Bodies (IoB): B/C → brain implanted devices raise ethical and legal concerns.
- Social credit algorithms: B- → privacy and freedom breaches
- Advanced (smart) materials and devices: B/C → smart road, smart pill, etc. Not widespread industrial or consumer use
- Active security protection: B- → still more reactive than active
- Augmented reality (AR) and virtual reality (VR): B+ → headset PC tethering needs to wireless
- Chatbots: B → $1.5B now to $7.5B in 2024. Still a voice response than an actual customer representative avatar
- Automated voice spam (robocall) prevention: C → call needs more annotation
- Technology for humanity (specifically machine learning): B/C → revolution has just started with devices such as smart stick for the blind

https://www.prnewswire.com/news-releases/ieee-computer-society-grades-2019-technology-predictions-scores-a-b-300965074.html

2020 Technology Predictions & Grades

- **Artificial Intelligence (AI) at the edge (AI@Edge)**
- **Non-volatile memory (NVM) products, interfaces and applications**
- **Digital twins, including cognitive twins**
- **AI and critical systems**
- **Practical delivery drones**
- **Additive manufacturing**
- **Cognitive skills for robots**
- **AI/ML applied to cybersecurity**
- **Legal related implications to reflect security and privacy**
- **Adversarial Machine Learning (ML)**
- **Reliability and safety challenges for intelligent systems**
- **Quantum Computing**

https://www.computer.org/press-room/2019-news/ieee-computer-societys-top-12-technology-trends-for-2020

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