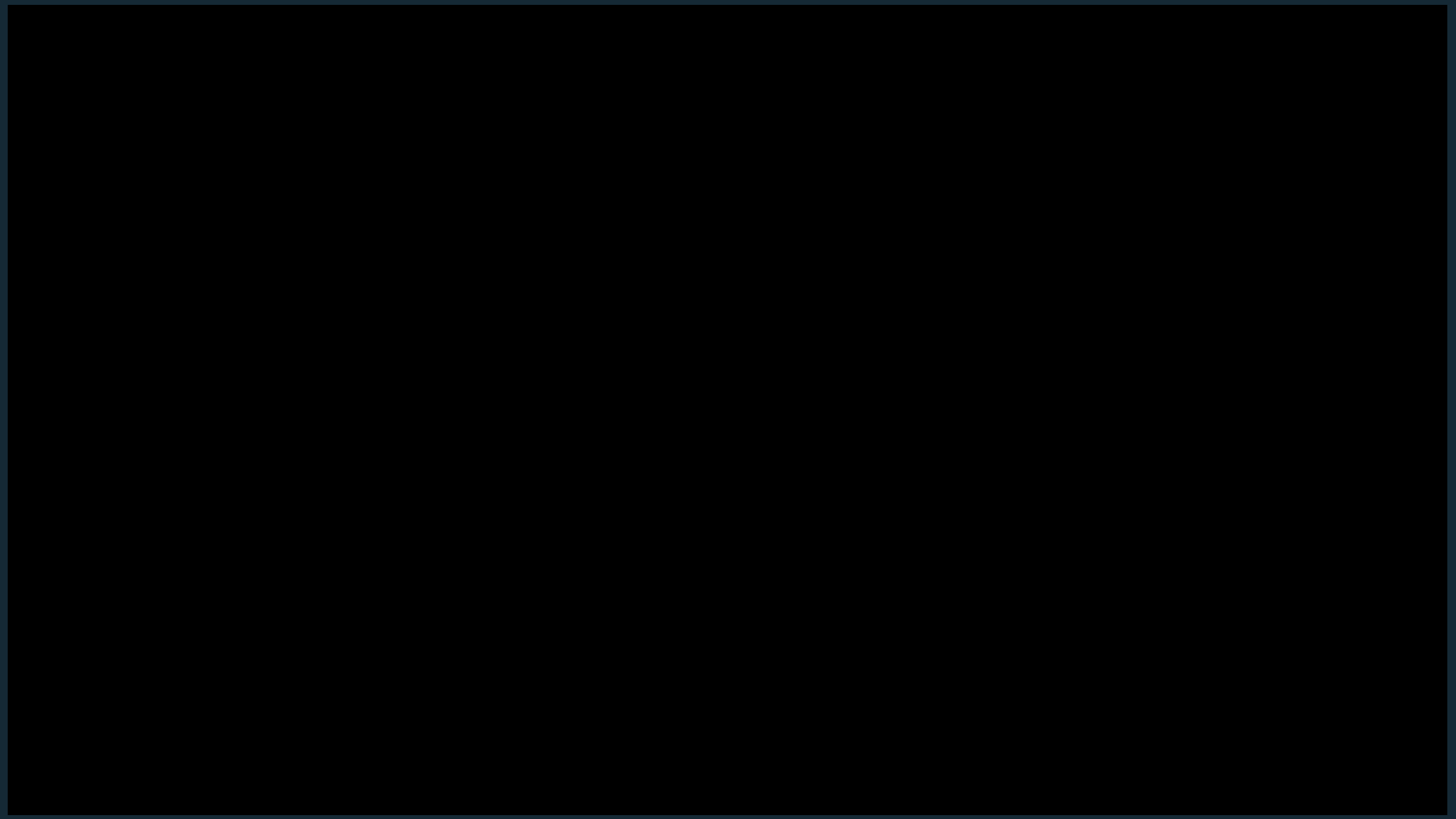
Building Personalized and Compassionate Conversation Systems

Rama Akkiraju
IBM Distinguished Engineer

Cutting a Movie Trailer with Visual Recognition and Emotion Analysis

Personalizing shopping Experience with Personality Insights

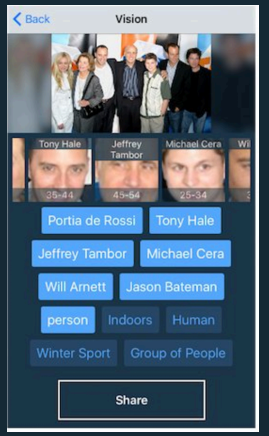


Cognitive Systems augmenting Human Intelligence

Healthcare

Legal case Research

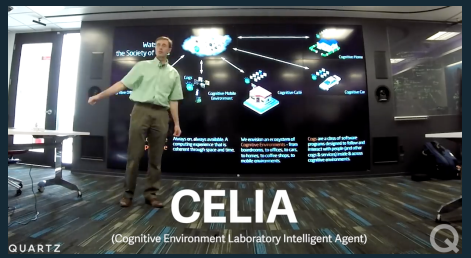
Social Media Listening for Marketing and Personalization



Face Recognition for Security and Personalization

Speech Recognition for Customer Care

Emotion Recognition for Personalization



Company Analysis for business growth opportunity identification

Need Building Blocks to Build Cognitive Applications

Text-to-Speech

Natural Language Understanding

Speech-to-text

Personality Insights

Discovery

Natural Language Classifier

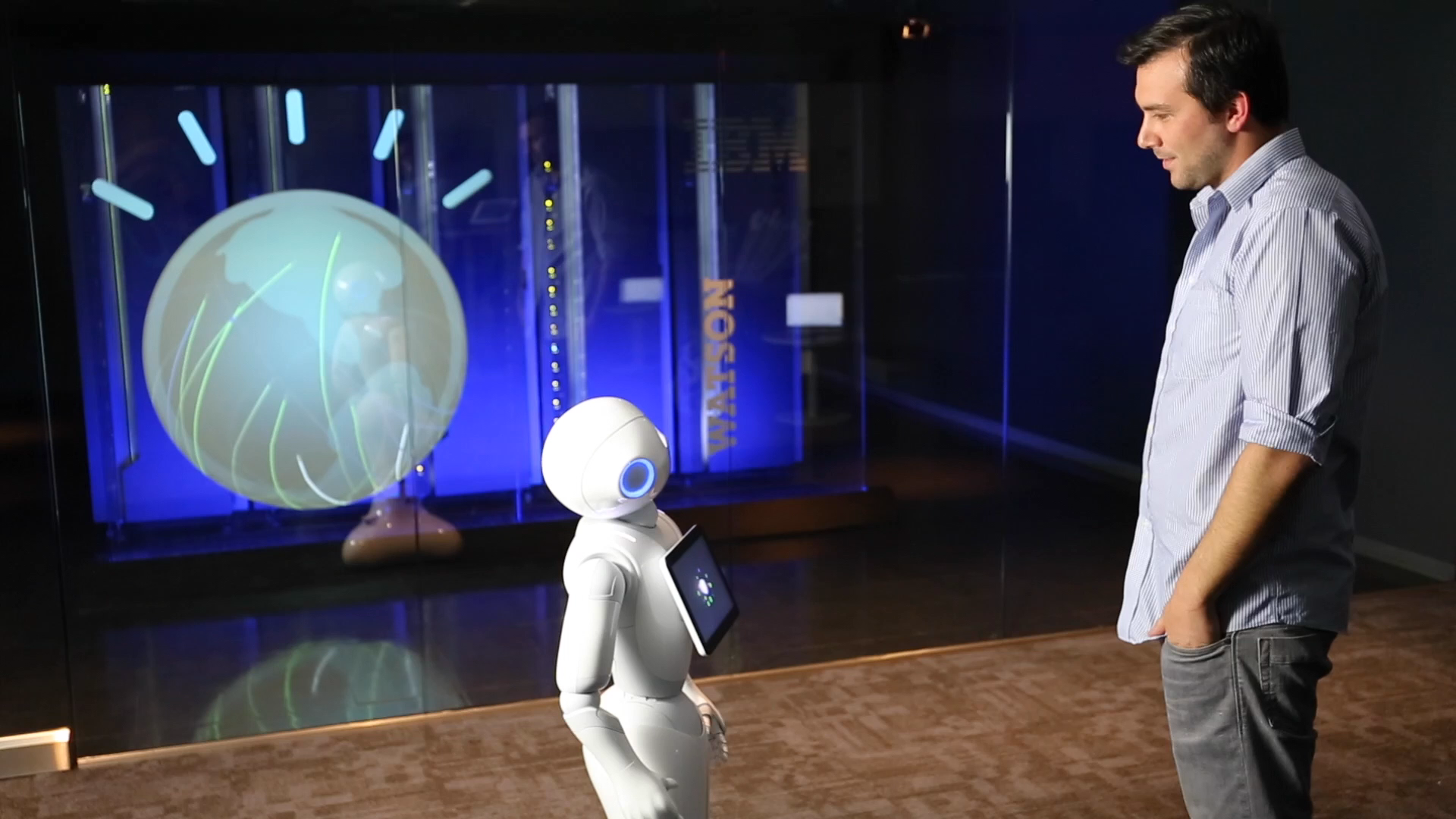
Visual Recognition

Language Translation

Conversation

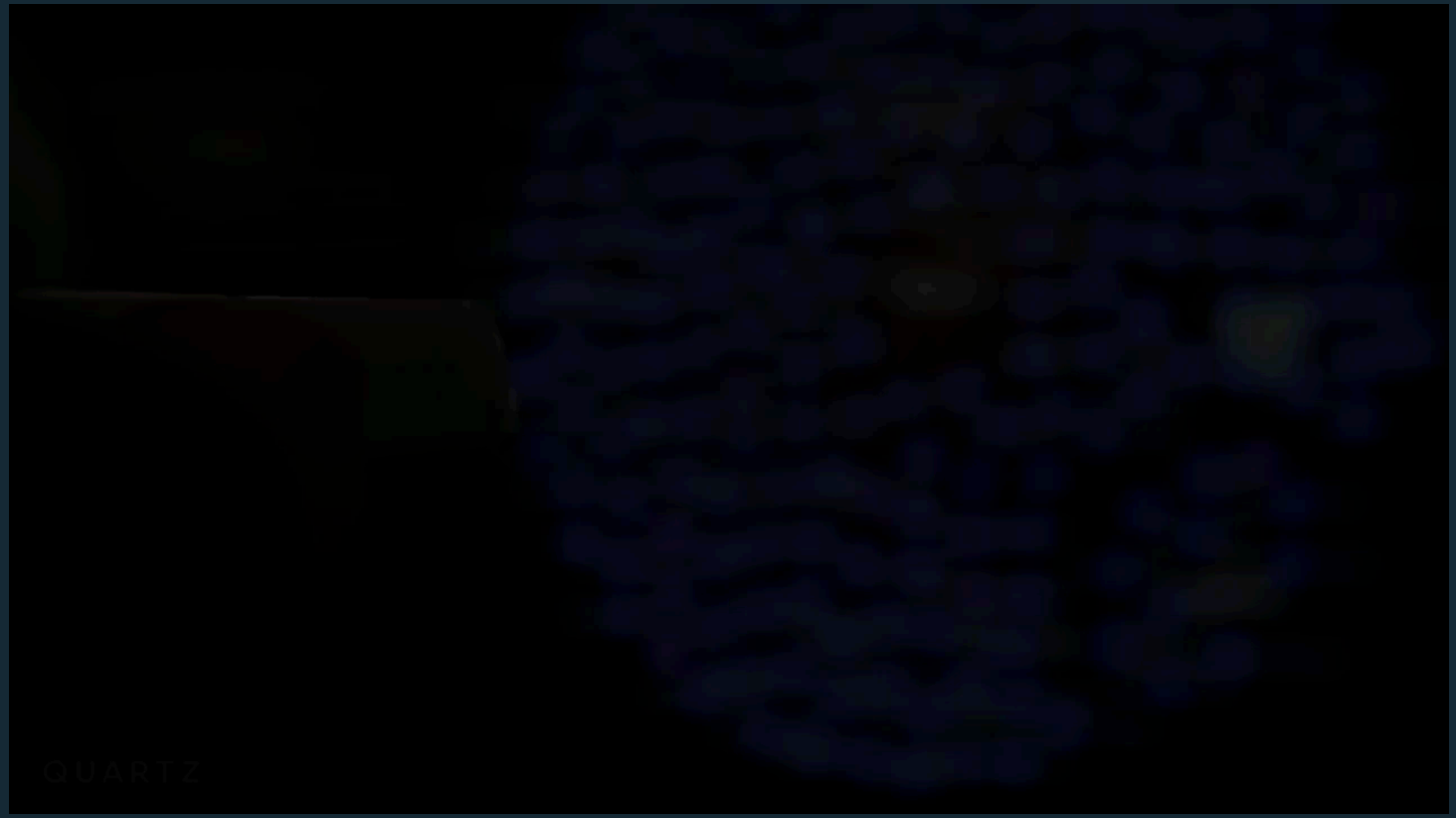
Tone Analysis

Emotion Analysis


WATSON

Bot Personas & Expressive Paraphrasing

Next Gen Cognitive Applications with Immersive User Interfaces



Technologies Enabling Next Generation of service systems

- Cautionary Statements

- My Technologies list is heavily biased from Software/AI perspective
- I’m not covering any nano/chip, chemical, material science related innovations that are shaping up
- Prepared through my colored lenses.
- Not exhaustive.

Technologies Enabling Next Generation of service systems

1. AI/Cognitive assistants/bots/robots everywhere and for everyone
   - Conversational
   - Highly Personalized
   - Contextual
   - Services delivered through multiple devices, multiple modalities
   - Always connected
   - Doing the research for you to enable decision support
   - Making you aware of alternate possibilities to enable discovery
2. Blockchain (distributed ledger)
3. Sharing Economy/Capacity Utilization (Uber, AirBnb)

Technologies Enabling Next Generation of service systems

4. Internet of Things, instrumented worlds (Smarter homes, Smarter Cities, Smarter Workplaces, Smarter Cars)
5. AI-based Automation (Autonomous vehicles/Assisted driving, Drones)
6. Micro Services (Uber, Netflix, Twitter, Paypal, Bluemix, SoundCloud)
7. Server-less Computing (Function-as-a-Service)
8. Continuous Delivery Tools (Docker, Jenkins)
9. AI in Industries
    - Healthcare (Doctors assistant, Radiologist's assistant)
    - Legal Assistant, Brand Manager's assistant,
    - New Business Opportunity Identification Assistant
    - Security and Surveillance

Technologies Enabling Next Generation of service systems

10. 3D Printing
11. Cyber Security/Privacy
12. Augmented Reality, Immersive Experiences and User Interfaces
    - Entertainment (gaming)

Gaps in Industry and Academic Research and Opportunities for collaboration

- User Models: Lifecycle management issues
  - Who creates it, who owns them, who updates them, who maintains them? Who sells them, who pays for them?
- Standards and communication protocols among multiple devices, ‘things’ on the Internet, cognitive agents, bots, robots, digital assistants etc.
- Societal norms/laws/policies around accepting these digital agents
  - Robot Companions, Autonomous Vehicles, Wearable devices, embedded devices etc.
  - Ex: Google Glass being a witness to murders