From Zero to Hero: Analyzing Videos using Deep Learning

Intelligent Video Analytics with Deep Learning

Jongho Kim

December & Company Inc.

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Intelligent Video Analytics with Deep Learning

- (Subtitle) "From Zero to Hero: Analyzing Videos using Deep Learning"

Goals of This Session

- From Zero to Hero: Analyzing Videos using Deep Learning

  - There is no prerequisite related with programming skills for this session

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• From Zero to Hero: Analyzing Videos using Deep Learning

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• Make it possible for you to analyze your own video data

What is Video Analytics?

• Video Analytics is really the study of video data

• The amount of video data in our world has exploded to a ridiculous degree

   • 82% of all Internet traffic would be video by 2022 (CISCO, 2018)
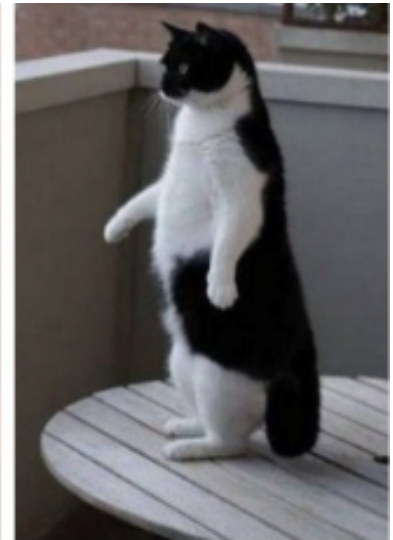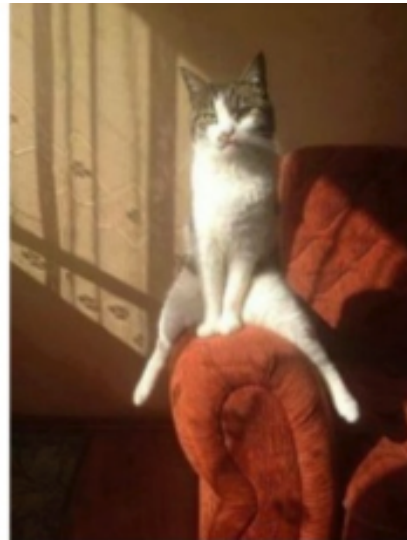   • The majority of bits flying around the Internet are actually video

Why is it Difficult to Analyze Video Data?

• However, there's a problem with video data that it's really hard to understand

  • Video has multiple modalities with the usage of audio, visual and (possibly) textual data

  • A few of Problems: Semantic Gap, Deformation, Illumination, Occlusion, Intra-class Variation, Cocktail Party Effect, etc
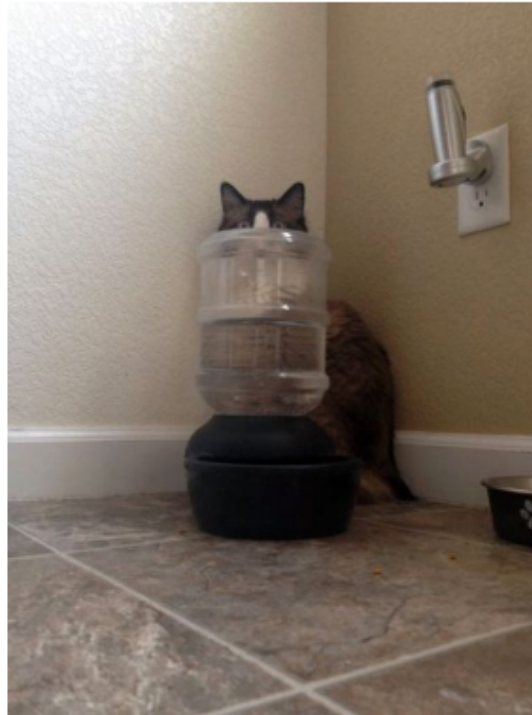
References: Stanford CS231n

Why is it Difficult to Analyze Video Data?

- Challenges: Deformation

References: Stanford CS231n

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Why is it Difficult to Analyze Video Data?

• Challenges: Occlusion

Why is it Difficult to Analyze Video Data?

- Challenges: Intra-class Variation

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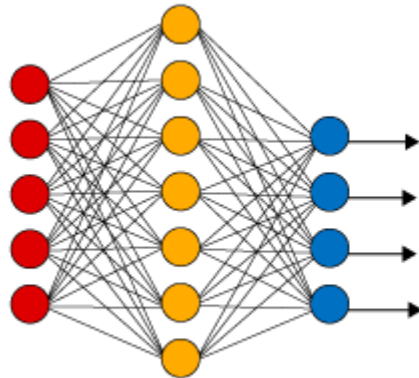
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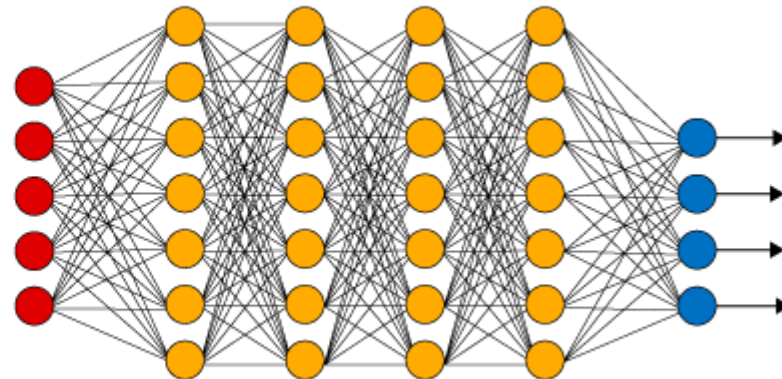
• Challenges: Cocktail Party Effect

Why is Video Analytics Recently Becoming a Big Player?

• Deep Learning has achieved very promising results in a wide range of areas including **Computer Vision**, **Speech Recognition** and **Natural Language Processing**

Key Market Segments of Video Analytics

• Video Analytics Market was valued at $2,745 million in 2016, and is estimated to reach $13,381 million by 2023 (Allied Market Research, 2017)

Video Analytics Market Key Segments	
By Application	- Activity and Event Recognition - Audio and Speech Processing - Scene Analysis and Interpretation - Visual Feature Extraction - Question Answering
Industry Vertical	- Entertainment - Healthcare - Home Automation - Transportation - Retail - Manufacturing - Energy & Utilities - Critical Infrastructure

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Intelligent Video Analytics with Deep Learning

• Welcome to "Intelligent Video Analytics with Deep Learning"

• We mainly focus on 1. **social science research and practice applying video analytics** and **2. learn how to understand and analyze quantitative video data** based on deep learning

Three Modules of This Session

- Module 1. Video Analytics and Social Science Research

- Module 2. Underlying Mechanisms of Deep Learning

- Module 3. Detecting Labels in Your Own Video Data

Thank you ☺

Contact Info: quantic.jh@gmail.com