CCC Workshop on Wide-Area Analytics
Context: Wide-area Analytics: Example #1
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Potential (classical) questions:

Systems infrastructure related:
• Storage semantics, and systems
• Compute semantics, and algorithms

Resource-performance related:
• How to distribute computation?
  • Edge vs cloud?
  • Resource/Performance/accuracy?

Security/Privacy related:
• Secure storage
• Privacy-preserving computations
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Context: Wide-area Analytics: Example #3

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Context: Wide-area Analytics: Example #4

Potentially different goals/constraints
This workshop

Existing and emerging use cases and their constraints/goals/semantics/models.
This workshop

Existing and emerging systems infrastructure and their properties

+ Models, semantics, achievable performance
This workshop

Existing and emerging **use cases** and **their constraints/goals**
+ Models, semantics, goals, constraints

Existing and emerging **systems infrastructure** and **their properties**
+ Models, semantics, achievable performance
Why this workshop? #1: Timeliness

- **New tipping point: recent innovations in applications**
  - AR/VR
  - ML and computer vision
  - Self-driving (* = cars, = networks, = databases)

- **New tipping point: recent innovations in hardware infrastructure**
  - End-hosts (e.g., TPUs)
  - Improved storage and memory devices (e.g., 1M IOPS NVMe)
  - Adoption of reconfigurable hw (e.g., FPGA, programmable switches)

- **New tipping point: emerging standardizations and software pipelines**
  - Security/privacy standards: GDPR
  - Wireless and networking standards: 5G
  - End-to-end software pipelines: Tensorflow, ....
Why this workshop? #2: Join Forces within “systems”
Why this workshop? #3: Bring Disciplines together
Plan

• **Talks on use cases**
  - Lili, Minlan, Victor

• **Talks on platforms**
  - Ion, Mike

• **Three breakout sessions**
  - One session for use cases related discussion
  - One session for platform related discussion
  - Read-out session for joint discussion
  - Breakout#3 topic left open — please suggest

• **Hopefully, a lot of hallway discussion**

• **Output: A “report” summarizing our discussions**
Why this workshop? #3: Setting up an agenda

• Work across research area “boundaries”
  • Current siloed areas
  • Great work in each of them
  • Sum of parts less than overall potential output

• Encourage research programs
  • Toward a unified goal
  • Bringing intellectual and infrastructure resources together
  • Improve cross-area research funding and appreciation

• Building tools and techniques
  • <Needs a bit more thinking>