Open Discussion on The Future Direction of NMLRG

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Original Motivation of the Proposed NMLRG

- Networks and network problems become more and more complicated, many varieties and dynamically changing
  - Looking for new mechanism that can adapt to various and dynamic environment
  - Looking for autonomic mechanism to replace human operations, even human programming
- Machine learning was also motivated by tasks that are extremely difficult to program by hand
  - Advantages: robustly solve complicated tasks, reliance on real-world data instead of pure intuition, be able to adapt to new situations
- The Network Machine Learning Research Group (NMLRG) provides a forum for researchers to explore the potential of machine learning technologies for networks.

Potential Usage in Network Area

- **The machine learning mechanism can be used to intelligently learn the various environments of networks and react to dynamic situations**
- **Many network aspect can benefit: network establishing, controlling, optimizing, managing, network applications network faults analyzing & recovery, and customer services, anti-attacking, etc.**
  - autonomic and dynamically manage the network
- **Predict future network status**
- **Unify the data structure and the communication interface between network/network devices and customers, so that the upper-layer applications could easily obtain relevant network information, etc.**

NMLRG Future Directions

- **Possibility for “standard” NML training data**
  - **Evaluate the ML solutions**
  - **Possible for standardization?**
- **Generalization**
  - **Network specific solution vs. generalize among networks**
  - **Task specific solution vs. generalize among tasks?**
- **Guidance on applying ML in network area**
- **Common characters of networks**
  - **Understanding the foundation/essence of networks**
  - **Potential common NML infrastructure for specific requirements?**
- **Autonomic decision (closed control loop) vs. Analysis Tool (human assistant only)**
- **Unify the ML-oriented information exchanging protocols and their data structure**