

# IRTF Activities Report

Dimitri Papadimitriou

[dimitri.papadimitriou@nokia-bell-labs.com](mailto:dimitri.papadimitriou@nokia-bell-labs.com)

Bell Labs

# Machine Learning

- Past trials
  - Learning-Capable Communication Networks (LCCN) Proposed RG: from IETF 80/Nov2010 to IETF 82/Nov.2011
  - Network Machine Learning (NML) Proposed RG: from Aug.2015 to Dec.2016
- New initiative@IETF: Intelligence Defined Network (IDNET)  
Mailing list <https://www.ietf.org/mailman/listinfo/idnet>
- So far didn't make it ... some potential reasons
  - How to reconcile statistical/inductive learning with deterministic network/protocol operations
  - Automated diagnostic/identification/analysis/etc. (troubleshooting) vs. control model very close to model-predictive control, self-adaptive closed loop control ... What's the overall finality from the Internet perspective ?
  - Generic (what could be done beyond info model) vs. case-specific (what's the learning objective, task)
  - Algorithmic vs. Protocol (IETF) ... like Traffic engineering 20 years ago (may be role of IETF is in defining a communication protocol between agent/node and a learner/server)
  - Epistemic uncertainty (due to lack of knowledge) vs. aleatory uncertainty (due to randomness/process variability)
  - Fundamental role of data and their properties (i.i.d. assumption often not verified)

# MAPRG: Measurement and Analysis for Protocols RG

- Chartered since Aug.2016 (IETF 96) <<https://datatracker.ietf.org/doc/charter-irtf-maprg/>>
  - Meeting as proposed RG @ IETF 95 and 96
  - Chairs: Mirja Kühlewind, Dave Plonka
  - Open membership
- Scope: internet measurement research ↔ IETF
  - Exchange of measurement-derived insight
  - Discussion of techniques and best practices for measurement relevant to protocol
  - Engineering and network operations
  - Collaborations to share data supporting these measurements
  - "landing pad" for the Internet measurement community to introduce its efforts to the IETF
- Relay of many EC projects related to measurement/monitoring

|   | <b>IETF 96 (Berlin)</b> | <b>IETF 97 (Seoul)</b>        | <b>IETF 98 (Chicago)</b>     | <b>IETF 99 (Prague)</b> |
|---|-------------------------|-------------------------------|------------------------------|-------------------------|
| <b>Crypto Forum (CFRG)</b>                          | Meeting                 | Meeting                       | No meeting<br>RFC 8032       |                         |
| <b>Global Access to the Internet for All (GAIA)</b> | Meeting<br>IAB Review   | Meeting<br>RFC 7962           | No meeting                   |                         |
| <b>Human Rights Protocol Considerations (HRPC)</b>  | Meeting                 | Meeting<br>IAB Review         | Meeting                      |                         |
| <b>Internet Congestion Control (ICCRG)</b>          | Meeting                 | Meeting                       | Meeting                      |                         |
| <b>Information-centric Networking (ICNRG)</b>       | Meeting                 | Meeting<br>RFC 7927,7933,7945 | Meeting                      |                         |
| <b>Network coding (NWCRG)</b>                       | No meeting              | Meeting                       | No meeting                   |                         |
| <b>Network Function Virtualization (NFVRG)</b>      | Meeting                 | Meeting                       | Meeting                      |                         |
| <b>Network Management (NMRG)</b>                    | Meeting                 | Meeting                       | Meeting                      |                         |
| <b>Software-defined Networking (SDNRG)</b>          | Joint with NFV & NM     | Meeting                       | <b>Closed since Jan.2017</b> |                         |
| <b>Thing-to-Thing (T2TRG)</b>                       | Meeting                 | Meeting                       | Meeting                      |                         |

# Others

- Activity on Decentralized Data & Service Federation (met @ IETF 95, 96, 98):
  - mailing list: <https://www.ietf.org/mailman/listinfo/din>
  - Wiki: <https://trac.ietf.org/trac/irtf/wiki/blockchain-federation>
- New IRTF Chair (since IETF 98, Jul.2017): Allison Mankin
- ACM, IRTF & ISOC Applied Networking Research Workshop (ANRW)
  - URL: < <https://irtf.org/anrw/> > and <<https://irtf.org/anrw/2017/cfp.html>>
  - Peer-reviewed workshop; Collocated with IETF-99 Prague
  - Date: July 15, 2017
  - TPC chairs: Renata Teixeira (INRIA), Jörg Ott (TU Munich)
  - ACM Open access proceedings
- Applied Networking Research Prize (jointly with ISOC)
  - URL: <https://irtf.org/anrp>
  - 26 award winners to date from IETF 81 (2011) to IETF 96 (2016): 8x ACM IMC, 4x ACM SIGCOMM, 3x USENIX NSDI, 2x ACM CoNEXT, 2x IEEE SSP, 7x other (CCR, TON, JSAC, ICNP, ...)
  - Selection rate: 10-15%
  - Observation: IEEE -both journals and conferences- to increase nominations