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HLG-MOS Machine Learning Project

Presented to 2020 Workshop on the Modernisation of Official Statistics

Claude Julien – UNECE Project Manager

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The great work from a large group of professional, engaged, talented, perseverant and very pleasant people, and their numerous collaboraters and supporters

Very happily presented to 2020 Workshop on the Modernisation of Official Statistics

Claude Julien – UNECE Project Manager

Is ML just a buzz, a bust or a must?

- ML is definitely NOT just a BUZZ

- ML is a MUST… where it adds value

- ML is still up against some BUSTers (challengers and resistors)

Note: the ML group icon in this talk points at ML project outputs.

ML is definitely NOT a just a buzz!

- The ML group has continued to grow (40 participants and 80 other collaborators and followers)

- Organisational changes within several NSOs

- Some NSOs have set-up internal and external fora for data science and ML

- Many talks, organized sessions and entire on ML

- 325+ registrants from 46 countries and 95 organisations at ML webinar

Background

- Project objective: Advance the sound and efficient use of ML in the production of official statistics

- WP1: Pilot Studies (demonstrate value added)
  - Coding & Classification; Edit & Imputation; Imagery

- WP2: Quality

- WP3: Integration challenges

ML is a MUST... where it adds value

- 21 study reports and 3 summary theme reports shared on public wiki last week

- On C&C, ML does deliver better quality at same/lower cost

- On E&I, ML can add value in some situations

- On Imagery, ML is essential and must be as accessible as possible

  - Generic Pipeline for Production of Official Statistics Using Satellite Data and Machine Learning

Some takeaways

- Clear business needs and/or corporate-wide strategy
- Mutual support/trust between SM/operations and ML
  - Focus on how ML can improve process results, not on "taking over" the process
- Sufficient supply of good quality data for training and monitoring
  - Good quality = accurate + representative
  - More at the start, but some throughout its use
- Sound and efficient proof of concepts
- Focus on medium/long-term efficiencies
- Combination of multiple disciplines

ML is still up against some BUSTers (challengers and resistors)

- More ML methods have made it to production processes, but this "acceptance" is still a challenge
- Quality Framework for Statistical Algorithms (QF4SA)
- Integration challenges and practices

Quality Framework for Statistical Algorithms (QF4SA)

- Guide official statisticians on the choice of algorithms to be used in the production process

- Statistical algorithms cover both *traditional* and *modern* statistical methods

- Accuracy, Timeliness, Efficiency, Explainability and Reproducibility

- The QF4SA is not a replacement for existing quality frameworks but is a supplement to them

Integration of ML

- Identify and discuss challenges and practices
  - Organisation, skills, acceptation, align ML solutions to the right needs
- Multidisciplinary nature of ML
- Skill acquisition
  - Broad agreement that internal and external training courses valuable
  - Lots of great free resources on the web
  - Broad agreement that knowledge sharing, through internal communities of practice and international organizations valuable

Conclusions

- The ML project did advance the use of ML in participating organisations
- Its shared outputs should further advance it in more organisations
- Everybody should have ML in mind as a potential solution to their business needs
  - Everybody = all functions + all levels
- Have access to a centre of expertise to assess and support the development of ML
- Have clear ownership and accountabilities in the implementation and maintenance of ML

Recommendations

- Let the ML group continue to share and collaborate
  - ONS DSC has come forward to "lead" the group
  - Need continued support from the Heads of NSOs (HLG-MOS)
  - Stay connected to the HLG-MOS Exec
- Heads of NSO data science units should create a formal network to share management practices
- The ML group should continue to communicate and share with other groups looking into other aspects or other applications of ML within their respective broader agenda

I thank the ML group for all their great work

- Thank you
- Merci
- Tak
- Dank u
- Kiitos
- Danke
- Takk
- Grazie

- 감사합니다
- Takk
- Dziękuję
- Obrigado
- Хвала / Hvala
- Gracias
- Tack
- Mauruuru

I thank the HLG-MOS and the Exec Board for giving me this very pleasant and enriching opportunity