ML 101: Foundations of Machine Learning

Bloomberg L.P.

September 18, 2017

Plan

- Vlad speaks
- David speaks
- Questions
- Introductions

Logistics

- Class webpage: `https://bbgithub.dev.bloomberg.com/pages/ML101/fall2017`
- Based on similar class at NYU: `https://davidrosenberg.github.io/ml2017`
- Communication
  - Bloomberg-specific stuff: email & PCHAT
  - Machine learning stuff: Piazza `https://piazza.com`
    - (STILL BEING BOSS APPROVED)

Course Staff

- General course coordinator: Zoey Deng (please CC on all logistical questions)
- Project coordinator: Amanda Stent
  - Working to find advisers for each project group
  - If you want to nominate somebody, contact Amanda Stent and Zoey Deng
- 14 TAs:
  - Helping create course content (Jupyter notebooks, tutorials, homework)
  - Assisting with labs and homework feedback

Schedule: Lectures vs Labs

- Erratic schedule - sorry!
- Average 2.5-3 hours of lecture per week.
- Lectures will be recorded and posted to ELRN
  - Hope is to eventually release recordings externally
- Rest of time will be "lab" time.
- Work on homework, Jupyter notebooks, etc.
  - Laptops?

Labs / Homework

- First lab assignment out on Wednesday
- Collaboration is fine, but
  - Write up solutions and code on your own
- Many optional homework questions

Projects

- Very important part of the course
- Should be assigning project advisers in next few weeks
- Project presentations will kick off second iteration of ML 101 in January.

Prerequisites

- Math
  - Multivariate Calculus (gradients)
  - Linear Algebra
  - Probability Theory (independence, conditional expectations)
- Python programming (numpy)

High Level Goals of the Class

- Learn fundamental building blocks of machine learning
- Goal is to start seeing
  - **fancy new method A "is just" familiar thing B + familiar thing C + tweak D**
  - SVM "**is just**" ERM with hinge loss with ℓ_2 regularization
  - Pegasos "**is just**" SVM with SGD with a particular step size rule
  - Random forest "**is just**" bagging with trees, with an interesting tweak on choosing splitting variables

Questions?

- What are you looking to get out of the course?
- Questions for me?