Agenda

Conference updates
Idea generation
HW
Generating Research Ideas

“Standing on the shoulders of giants”

Most ideas may not be new
New may be subjective
Adding a layer to an existing deep learning architecture
When is it new?
When is it not new?
Idea Generator Heuristics

Combination / Hybrid techniques
  From the same discipline
    (e.g., ....)
  From a different discipline
    (e.g., ....)

Address Gap/limitation (Incremental?)
  Handle some cases that were not handled
  Improve some (partial) aspects of dimension

Apply different datasets / settings / contexts
In-class group activity

Pick a paper

Generate at least two derivative ideas

Present: original and derivative ideas
Graphs
Carte Figurative des prises successives en hommes de l'Armée Française dans la campagne de Russie 1812-1813.

Prise par M. Minaud, Ingénieur Général des Arts et Manufactures, 1869.

Parole, 20 Novembre 1869.

Les données d'hommes prisains, représentées par les lignes des armes contournées à main, de taille considérable, et auxquelles on les a exposées, indiquent bien que la campagne de Russie a été une des plus éclatantes de la guerre des armées de la France.

Les exemples de ces prises sont extrêmement intéressants et montrent bien que les armées françaises ont surpassé les forces ennemies dans la conduite de la guerre.

TABLEAU GRAPHIQUE de la température en degrés au thermomètre de Réaumur au-dessous de zéro.

Les lieux passés par les soldats de l'Armée, sont indiqués sur la carte, ainsi que les routes empruntées par les armées françaises et allemandes en Russie.
Example of a heatmap (red – high, blue – low)
Overlapping legend
Legend order different from line order

Chou 05
Legend overlapping data

Figure 2: The average minimum coverage achieved by various algorithms over 100 real world data sets of $1M$ items each.

Figure 4: Experimental results for the Independent data set

Panigrahi 12
(c) Reliability with different blacklisting thresholds
We saw two common styles

Arrows and text
Legends
Tools

matplotlib
Gnuplot
Excel
Inkspace
Powerpoint

Learn about: Vector format, high resolution graphics
Screen captured images

Zoom in before capture
Start with a large image

Ideally start with a vector image
Font size
Unusual placement of legends
Font size of axis labels too small
Just one idea to improve all your graphs

Increase the font size
Range
These graphs do not use consistent y-axis range so hard to compare across graphs
Idea #1 Range of the metric
Idea #2 Range of the observed values
Caption

Should be mostly self-contained
Don’t just describe the lines
ben, a state change time between actions at the rate of rate of the rate suddenly change. The rate change how does BigBen each activation approach time keeping. To a low-power Micro RTC powered by a reliable time source activation. Now calibrating time change events, advantage: change global clock. This is events locally rather to the RTC, BigBen the lights turned on in logs rather than on the sensors. Monitoring is worth configuring to otherwise a proxy for occupancy detection that many rooms sensitive lights. That are detected in a room no motion is detected. BigBen can detect this and infer when the room is occupied, but in certain cases, it is difficult to ensure an energy-efficient operation.

Figure 6: Recharge rate in varying lighting conditions. We measure the time the solar cell based energy-harvester takes to recharge in opportunistic trigger mode under different lighting conditions. As expected, the brighter the room the faster the recharge rate. Rooms with natural light (atrium and office) can support relatively fast recharge rates (in the 10s of seconds). Rooms with only artificial light (lab) cause the sensor to recharge more slowly, but can still support a sample every two minutes.

Figure 7: CDF of the interval between door open events. Plotted on a log scale x-axis is the CDF of time intervals between subsequent door opening events of a door over a month period. Also shown are the recharge times for the solar based energy-harvesting power supply in different lighting conditions. Sensors in rooms with natural light would be able to detect most door open events, and even in moderately lit rooms at least 65% of door open events would be detected.
HW

Full paper submission

Reviews